AGRICULTURAL LAND USE PATTERN IN RELATION TO RURAL SETTLEMENT IN THE DISTRICTS OF FAIZABAD AND SULTANPUR

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List of Maps

INTRODUCTION

The area under study lies in the Ganga Plain and covers 8,826 Sq.Km. It is bounded in the east by 83°10'E. longitude and in the west by 81°32'E. longitude. In the north 26°52'N. latitude forms the northern boundary while 26° 0'N. latitude makes the southern boundary. It is a level plain and usually made up of fine alluvial soils. There are a number of rivers e.g., Ghaghara and Gomati which are perennial but volume of water decreases during the hot summer season. Besides these some small rivers flowing in the area but they are non-perennial since they remain dry during the greater part of the year. The area has monsoon type of climate marked by its seasonal rhythm, the cold and the hot weather seasons. The average rainfall is about 90 Cm per annum which decreases from east to west. The prevailing soil in Faizabad and Sultanpur are generally loam in the level portion of the upland tract with sand on the high ground and clay in the depressions.

Source of Information

The author has taken painstaking efforts in the collection of relevant informations from primary, secondary and tertiary sources. These informations have provided the basis of the present dissertation.

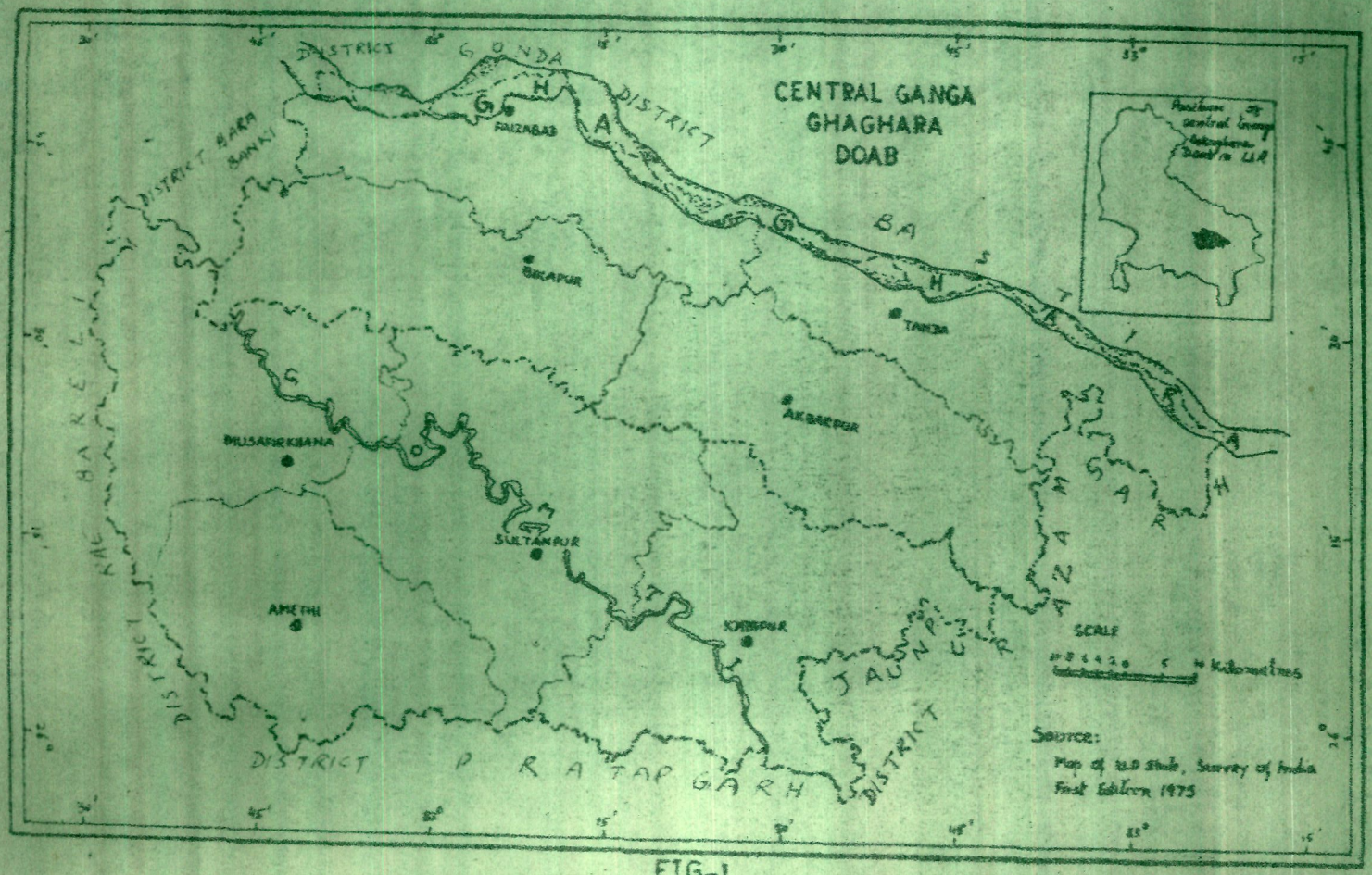
CENTRAL GANGA
GHAGHARA
DOAB
DISTRICT GONDA
DISTRICT BARA BANKI
DISTRICT RAE BARELI
DISTRICT SULTANPUR
DISTRICT PRATAPGARH
DISTRICT JAUNPUR
FAIZABAD
BIKAPUR
TANDA
AKBARPUR
PILIBHIT
SULTANPUR
AMETHI
KADIPUR
SCALE
Kilometres
Source:
Map of U.P. State, Survey of India
First Edition 1975

FIG-1

Research Methodology

In the first instance the author has prepared the synopsis of the present work which relates to the various aspects of the problem. These aspects, then, have been put into the form of chapters. Necessary and relevant informations from various sources have been obtained and processed. Maps relating to statistical data have been prepared and interpreted. In the light of the detailed discussion of the problem, some important conclusions have been drawn the author has also taken pains to suggest wherever necessary lines to improve upon the present position with regard to agricultural land use patterns in the area under study.

Aims and Objects of the Research Project

The basic theme of the prepared research work is to study and stablish correlation between several economic factors on the one hand and the pattern of agricultural land use on the other. The author has tried to assess the degree of impact of various economic factors in addition to physical, technological, institutional, political and fiscal on the agricultural land use pattern.

Rural settlements have always been considered as an elementary index of assessing the agricultural land use pattern in an area. This index relates to a set of factors which can be studied in relation with others.

The aim of this project is of three-fold.
(1) Evaluation of mutual relationship between various factors (physical and economic) and agricultural pattern in a wide sense.
(2) Estimation of the degree and extent of correlation between the different input variables and output in general.
(3) Presentation of the quantitative expression of the input variables over a particular area at micro level with a view to find out the estimated output.

The area under study includes the districts of Faizabad and Sultanpur and lies in the central Ganga-Ghaghara Doab. The project is divided into five chapters viz., (1) Purpose and scope; (2) Agricultural Land Use Pattern and Rural Settlement; (3) Relevant Factors affecting the Agricultural land use Pattern; (4) Case Study of two villages, one from the each district; (5) Conclusion and Suggestions.

CHAPTER I

DEFINITION AND SCOPE OF THE PRESENT STUDY

Agricultural land use pattern arround a rural settlement is the sum total of the patterns evolved as a result of farming or subsisting on individual holdings which are fragmented and scattered all around the territory of the settlement or village.

Food, clothing and shelter form the basic necessities of man and for which he makes efforts to make a better and prosperous life. According to the necessities of life the agricultural land use pattern becomes established. The location of human settlement to a large extent shaped the pattern of cultivation of food grain crops. Sometimes the distance between the dwelling houses and the fields have created problems in respect of safeguarding the standing crops, hence human settlements of various shapes and sizes came into being.

The word settlement is widely used to include all structure built by man to house himself and his property which may be either temporary or permanent.[1]

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1. Blache, P.Vidal-de-la, Principle of human geography, London, 1952, p.271.

Of all the features caused by the human occupance of the earth, the dwelling houses and its agglomeration into settlements of various types, shape and size are by far the most impressive. The spatial arrangements of the dwelling houses is in itself a meaningful expression of human adjustment within a given set of environmental factors.

The area assigned for the present research project having characteristically rural land scape studded with innumerable rural villages in a vast fertile plain of two districts of Faizabad and Sultanpur, provides a good agricultural land use pattern and rural settlement in all their complexity.

The present study takes into account the effect and the function of agricultural land use pattern in the environmental setting of traditional societies. It also aims at working out the correlation between the rural settlements and the prevailing patterns of land use and the physical and socio-economic factors related with these patterns in the two districts of Ganga-Ghaghara Doab in general. Apart from this generality the author has also examined some specific areas to find out the correct idea about the influence of these factors on farming patterns in the area.

Among the factors of physical environment, relief, climate and soil may be listed here, while factors like social and economic bonds, development of roads, farm size, farm

management, distance involved, market system, labour, cost, class and community prejudices have combined influence towards the rural settlements and agricultural land use patterns around these villages.

The evolution of agricultural land use pattern in relation to rural settlements or villages can be analysed and explained with the help of the factors cited above. A good and adequate sources of water supply, proximity to fertile soil and security of life can be considered to be the major factors which have determined the (Abadi) settlement site and agricultural land scape in the Ganga-Ghaghara Doab. It is because of the important part played by sources of dependable water supply in the basic occupation of agriculture that a large number of villages are found situated along the rivers, canals and other water points. However, in low-lying khadar lands in the tracts adjoining the rivers are generally avoided for the fear of floods. Bhangar lands are of high village density and good for agricultural occupation.

It would be of great relevance if an inquiry is made into the role of rural settlements in the materialization of the current massive change in the region's agricultural structure.

The study would thus reveal a significant aspect of the rural habitat in all its ramification and would perhaps

lead to a fresh assessment of the role which our villages play in the evolution of our present agriculture land use patterns.

The author, having full realization of limitation of time and resources available at his disposal, aims to consider the above cited factors in relation to two specific villages and show to what extent they have influenced the agricultural land use patterns around the rural settlement.

CHAPTER II

AGRICULTURAL LAND USE PATTERN AND RURAL SETTLEMENT

THE FARM LAYOUT

Since the village comprises all hamlets and farm-steads and is the original point for emanation and collection of all inputs and outputs respectively, we may then stipulate the farm in the following term:

(1) Village or group of farm houses, farm-stead or farm buildings are the point of origin for all the inputs which have to be applied to the fields. There the farmer's family lives leaving the farm-stead daily for the field and returning, generally all labour formerily gather at the farmer's house and later proceed to the fields. Likewise, the manure accumulates in yards near the village, fertilizer and other appliances are stored there and these and every thing else which is applied to the field must be taken thence to the field.

(2) Farm-stead is also the point to which all the produce of the farm is brought either for consumption there or onward movement to the local dealer or market making it collecting and clearing centre. However, in some cases, produce may be

moved straight from the field to the local dealers. It has also been observed that in case of workers who happen to live in some other villages may proceed to the field of operation without recourse to the farm-stead for instruction.

Of all factors, distance is the most important in relation to the movement of goods and persons. The farm layout involves the location and arrangement of the buildings and fields comprising the complete farm unit. The location and arrangement of farm buildings including the home and the fields affect the cost and return. Often farms are not arranged so that the most efficient use of the available resources cannot be employed.

With increasing importance and improved labour efficiency, the layout of farm seriously affect the cost and return. It is possible to measure cost directly in terms of man-hour supplmented by tractor and draught animal-hour. If preferred there may be converted into money cost. This monetary cost can be compared directly with other money cost and the money return.

The importance of location of farm fields with respect to the buildings varies according to the type of farming. On farms where bulky crops such as wheat, rice, sugarcane, potato and other grain crops are produced and stored, should be close to the settlement as possible.

SIGNIFICANCE OF DISTANCE IN FARM MANAGEMENT

If the farm happens to be located close to the place where from the farmers have to manage it, it will be easier for him to transport labour and other materials to the farm and it will also be quite possible for him to spend less time in reaching the farm. This will result in a greater degree of intensity of farming. Contrary to this, if the farmer happens to be at a distance the farmer will have to put in extra hours in supplying labour and other agricultural requirements to the farm and this will naturally bring down the intensity of cropping and ultimately the outcome will be minimized.

Presently fragmentation of holding appears to be the most essential cause of large distance between the fields and the settlements and this needs tremendously to be realized and examined.

In the area though consolidation scheme has been enforced and has nearly been finished, in many of the cases re-allocation has not been done genuinely and honestly. Farmers who happen to be influencial and adopted unfair means were given best land available at suitable places, their holdings were properly consolidated into blocks closest to the settlements. The poors were the suferers as their lands

were not amalgamated properly. They were allotted their lands in many blocks at different sites which mark little change from the earlier position. Thus the scheme of consolidation in the region did not serve the purpose for which it was meant. It was taken to modify the pattern of land holdings in such a way that the distance separating the farmstead from the land is reduced and number of holdings minimized to the possible extent. But in the real sense the task was not performed.

Consolidation means re-allocation of holdings which are fragmented, the creation of farms which comprise only one or a very few parcels in place of multitude of patches formerly in the possession of each peasant. At the same time, roads are re-aligned, drainage improved, water supply made available, better system of farming introduced and some temporary or permanent farmstead re-located if possible. The task that has been undertaken by the Government of Uttar Pradesh in the region is extremely important but it has been observed that the attention is not being given to the problem.

RELATION OF PRODUCTION WITH CONSOLIDATION OF HOLDINGS

Consolidation reflects on the conglomeration of a number of dispersed holding of a farmer lying in different directions and distributed haphazardly over a large area from

the settlements into one or two arranged unit in a way so that space between cultivable land and settlement is minimized and managed on a rational basis.

Consolidation of land opens new opportunity of possible agricultural development. If the land of a farmer is situated near the settlement the time in travelling from the point of management to the field is saved, use of machinery becomes easy and maximized, labour requirement is reduced, and eventually the farming is intensified with the result that there would be an increase in gross and net production.

As cited above if land is consolidated and farming mechanized, the labour requirements will automatically be curtailed. This would therefore enforce temporary displacement of labour force who are unable to get employment in the area. However, this scheme will directly or indirectly improve the cultivation where there is a shortage of labour.

If land and farmstead both are re-located which in the area seems to be impracticable, the saving in time in travelling and transporting the agricultural material will be greater.[1] As a result of consolidation of holdings, Jacoby arrived at the conclusion from Australian experience that on

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1. Chisholm, M., Rural Settlement and Land Use, London, 1962, p. 119.

average the labour force is reduced by 14 per cent and gross yield rose from 20 to 70 per cent. He further said that family workers could spare some time from agricultural work which they could utilize to earn outside agriculture.

RELATION OF PRODUCTION TO DISTANCE

It is accepted that the amount of gross and net production is indirectly proportional to distance from the village provided that soil and other agricultural requisites remain constant at every point from the settlements. In this connection the author has quoted below some examples from different countries to illustrate the viewpoint.

Willa[1] from Finland measured the effect of distance and consolidation of holding on production. He found that only at a distance of one kilometre the gross production fall to 16 per cent and net by 44 per cent. At two kilometres this fall was maximum and net return reduced to minimal.

Virri[2] found in Finland strikingly similar decline in gross yield but net yield declined more rapidly for the first kilometre but less precipitately thereafter. Likewise,

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1. Wiila,A., Uusjaon Vaikutuksesta Jakokunnau Maatalousteen, 1948, op.cit., Chisholm, M., Rural Settlement and Land Use, London, 1962, p.50.
2. Virri,T.J., Maanjako-olojen Vaikutuksesta Maataloustuotantous, Maatalous Agronomien yhdistkysen Julkaisa, 1946, pp.6-11, op.cit., Chisholm,M., Ibid, p.50.

Suomela[1] expressed that net product declines as distance increases from the settlements.

The examples cited above show that gross as well as net product should decline with increase of distance from the village. The reasons may be given as under:

1. The land at greater distance from the village does not receive considerable input of manure with the result that soil exhausts its fertility. It is generally accepted that poor land be at a greater distance than the better one, but not necessarily the farm with greater average distance would possess inferior quality of soil.

2. Actual level of labour input ought to diminish with increasing distance.

3. Land at larger average distance from the village costs high transportation rate and could not be watched over and attended to easily and regularly.

On the basis of report about 227 village farms in Sweden, Lamsson[2] obtained very similar account of rate of decline for gross and net products and he concluded that the finding must be attributed primarily to the influence of distance and to the quality of soil or other factors.

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1. Suomela, The influence of the location of fields on farming, International Journal of Agrarian Affairs, 1952, pp.18-22.

2. Larsson,G., Inflyandet ar Avstandet fran Bruckningscentrum till Inagojorden Pa Arbetsbehov,Driftsformer och Driftsresultat, 1974.(The influence of the distance between the farm centre and the farm land upon the need of work,the kind of farming and the economical)(Sis.result), op.cit.,Chisholm,M.,1962,p.51.

Relating to distance in a survey in Pakistan[1] it was noticed that expenses of cultivation increases by 5.3 per cent for every ½ Kilometre for ploughing, from 20 to 25 per cent for the transportation of manure, and from 15 to 32 per cent for the transportation of crops. It was concluded that if the intensity of farming remains constant at all distance the total cost of cultivating land rises by over 20 per cent for each kilometre. From the preceding examples it may be concluded that the distance holds sufficient control on production.

RELATION OF PRODUCTION TO THE SIZE OF FARM

The size of farm does have some influence on the type and intensity of land use and the desnity of population Usually large farms are located at a greater average distance to the village, consequently they show more rapid decline for gross products than do the smaller holdings and that the converse situation holds for net product. Other things being equal, the smaller a farm is the more intensively it is cultivated. The reason for this is that the man with a small business must try to extract every bit of income he can, from his property and, therefore, tends to push the production

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1. Chisholm, M., Rural Settlement and Land Use, London, 1962, p.51.

to the maximum level possible. The man with large enterprizes does not have to worry so much about obtaining the maximum total income and can afford to adjust his farming more carefully, reducing sharply his input on the more distant fields. In practice the ordinary farmers attempt to achieve a standard of living which seems to be reasonable. Once this is attained leisure for them becomes increasingly valuable and the farmers are inclined to refrain from working in the field and thus their income declines. If a large family acquires only a small portion of land then to sustain livelihood it is essential to operate an intensive type of farming; there is then, a strong tendancy to apply more labour and other inputs to each hectare than on large farms. In persuit of the aim, the farmer may choose more intensive products such as green vegetables or cash crops in preference to less intensive items like wheat and rice.

In the area under study people do not like to be mobile with the result that there is an increasing pressure on the existing land. Fields are continuously being divided and sub-divided. With the increase in population size of farm becomes smaller and smaller. To meet the basic requirements of the farming community intensification of output becomes a necessity.

Some work done on fragmented farms in the Netherlands showed that the gross yield rose by roughly 10 per cent for each kilometre a plot was smaller and nearer to the village. In India, very little work has been done so far in this direction.

RELATION OF IRRIGATION WITH AGRICULTURAL LAND USE PATTERN

Irrigation influences agricultural land use pattern so much so that even good quality of soils which are very near to the village are not so much intensively used as the inferior or medium quality lands if better irrigation facility is provided to these soils. In case good irrigation facility is available, even bulky crops like wheat, sugarcane, barley etc. and some perishable crops like vegetables are produced at greater distance from the village.

Professor Mohammad Shafi[1] examined the influence of different variables including that of distance from the settlements on the location of land use pattern in the District of Aligarh (U.P.) and arrived at the conclusion that in a country where farming is the mainstay of people, it is chiefly the availability of irrigation facilities and not distance which influence the location of the pattern of crops.

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1. Shafi, M., Assessment of Von Thunen Land Use Analysis in India, The Geographer, Vol.XXIV, No.1, 1977, pp. 1-9.

Professor Shafi while studying the problem took two factors into consideration:

1. Circular zoning around the settlements with varying distances;
2. Circular zoning around the canals and tube-wells with varying distances.

On the basis of the above two factors the following inferences were drawn:

With respect to the distance from the settlements the intensity of land utilization for wheat, peas and double cropping does not show any direct or indirect relationship but with increase in irrigation facilities vegetables and double cropping increase.

Coming from a rural area, the author himself has some practical experience about the cause and effect of various factors on the pattern of agriculture over a large area around his village. During the field study relating to the present research project, it was observed that the intensity of land use does not have any relationship with varying distances from the settlements. However, it does have a close relationship with varying distance from irrigation facilities. This relationship is valid only upto a distance of about half a kilometre and thereafter the situation is

reversed and it is not irrigation but the distance which is the determining factor of intensity as well as the pattern of cropping.

RELATION OF LAND USE PATTERN TO DISTANCE IN THE LIGHT OF VON THUNEN'S THEORY

In the modern times Von Thunen's theory is out-moded regarding the production, transportation and communication. However, in some cases the zoning of production around the villages is followed in accordance with the principles advanced by Von Thunen.

In the process of production, there are some cash crops or some rare crops which need to be visited daily on account of fear against theft and as much these crops are found in the vicinity of the village. Beyond this zone food crops like wheat, rice, jowar and bajra are cultivated. The villages which are away from theurban centres do not show intense patterns of concentric zones of these crops because perisable articles may be destroyed in the transit as the people have only slow mode of transport. Cash crops like maize, potato, sugarcane and vegetables are not grown from commercial point of view due to lack of adequate transport facilities and the high cost that might put the grower into

loss. They produce these crops around the settlements in scattered locations only for home consumption, Contrary to this, the villages which are close to the towns produce cash crops and vegetables etc. which can fetch better price, in the town market. They also produce off-season crops which can be supplied to the market on a normal transportation cost. Because of these opportunities a pattern similar to Von Thunen model could be seen around these villages.

Findings of Enayat Ahmad[1] from Uttar Pradesh are also in consonance with Von Thunen's pattern. He illustrated that the most fertile, heavily manured and irrigated land surrounds the village and is devoted to cash crops and vegetables. Beyond this lies the second zone which is occupied by main food crops and cereals wherein irrigation is done from wells or canals. Outer most zone, the poorest in fertility, is used for dry farming of millets and fodder crops.

Lands nearest to settlement tend to be more fertile because most of the village manure is dumped in the vicinity of the rural settlement. Land adjoining the villages also receive most of the refuse and human excreta of the villagers. Better irrigation facilities are generally available around the settlements.

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1. Ahmad,E., Rural Settlement Types in the Uttar Pradesh, (United Provinces of Agra and Oudh), Vol.XLII, No.1, 1952, p.232.

According to author's observation any distance upto one kilometre from the dwelling is of little importance for any special pattern, but specialized system of irrigation within this distance may bring some adjustment in the pattern of agriculture. But beyond this distance specially at two to three kilometres, distance, irrespective of natural fertility of soil exerts a strong hold over intensity of cultivation.

ADJUSTMENT TO DISTANCE

Chisholm, M.,[1] suggested two methods to subjugate the long distances in cultivation.

1. If the same product grown near the settlement is to be grown long away from the settlement, all the inputs (labour, fertilizer etc.) must be curtailed in respect of distant fields to compensate for the overcoming distance. The remainder might be applied to nearest fields and this will give rise to a high degree of profit, and will also make up the loss caused by the curtailment of inputs on distant fields;

2. At larger distances such crops should be grown which have less demand of inputs like labour, fertilizer and water etc. This method seems to be much appropriate.

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1. Chisholm, M., Rural Settlement and Land Use, London, 1962, p.54.

CHAPTER III

RELEVANT FACTORS AFFECTING THE AGRICULTURAL LAND USE PATTERN

Although the physical factors like climate, soil and topography determine the broad limits of different farming areas and are most important in affecting the type of farming, the special type of farming is modified by many socio-economic factors. Economic factors tend to determine the definite crop and kind of commodity produced within the various choices available as established by the physical factors. Economic factors change from time to time in contrast to the physical factors. Though soil and topography will not change, climate generally react in the same way each year. Based on the knowledge of what it has done in the past the future organisation and operation of the farm can be developed. In appraising the present and the future possibilities of agricultural operations in terms of economic factors it is necessary to know why the economic factors react to cause certain conditions.

Besides the physical and economic factors, the factors such as Fiscal, technological, institutional and political also play an important role. They are also equally

important determinants to affect the type of agricultural land use pattern in the region. In the present study the author has tried to highlight what really happens in practice as far as the various determinants are concerned.

A. PHYSICAL FACTORS:

The most important factors causing the present type of farming are physical. These factors vary from area to area and determine the general possibilities of growing a special type of crop suited to that area. The most important physical factors causing the present pattern of agriculture are as follows:(i) Climate (ii) Soil (iii) Relief.

i) CLIMATE:- There is no marked climatic variation but only seasonal change, that is of noticeable importance and affects the agricultural land use pattern in the area. Climatic factors include rainfall, temperature, the amount of sun shine, severity of winter, frost, frequency of storm, and similar dangers. Among these, rainfall and temperature are the most important factors which are the determinants of the present type of farming. The role of climate can be assessed by taking into consideration the three main seasons in the year. The seasonal rythm of climate determine the nature of crop which can be cultivated. In the area of study as a whole there is no marked seasonal

variation and if there is any, it is of minor importance to cause an areal variation in the cropping pattern. There are, however, some local causes for variation in the cropping pattern in some parts. In the wet summer season, rice, jowar, bajra, maize and arhar are mainly grewn in the entire area. Rice is the major crop of the season. In the winter season, wheat, barley, gram, pea and sugarcane, potato etc. are grown. Wheat is the main crop of this season. Dry summer season crops include vegetables, cucumber, musk melon and water-melon which are grown in the dry valleys along the river banks. This pattern is followed almost year after year. Rainy season in the area is most unreliable. Sometimes scarcity of rain and sometimes abnormal rainfall damage the crops. The only instance in which the basic type of pattern is distorted is when a village lies very near to the city to be able to produce cash crops but due to unfavourable climatic conditions a drastic change in economic condition results. In such cases, re-adjustment process must take place. Climate affects the agricultural pattern only when the area is very large and there is marked climatic variation within the region.

(ii) SOIL:- Soil is a strong determinant of cropping pattern. Soil in the area differs from place to place from village to village and also within the village itself. Prevalent soil in the area is alluvial. Other soils found in small portions are clay and sandy loam. Land in the vicinity of the village is known as 'goind' and is very very fertile. Fields lying away from the village are generally less fertile.

The most important group of soils under which variety of crops are grown in the area is alluvial soil. In the area though rice is grown under diverse soil conditions yet most suitable to the cultivation of rice are heavy soils, clay or clayey loams. If the soil is purely clay, only rice is planted in it and if for any reason rice is not planted, the field is left fallow and in the next season, gram, pea or kesari are grown. In sandy soil, jowar, bajra, arhar in(the kharif season), barley and gram in (the rabi season) are grown. If the area is low-lying, only rice in the 'kharif' season and kesari in the 'rabi' season are grown though in recent years, the Government has put a ban on this crop as this is prone to leprosy. Despite this fact the farmers grow this crop in these areas. In this way soil puts a restriction on growing a certain sort of crop in a certain type of soil.

(iii) RELIEF:- Relief exerts a definite control on type of farming mainly through the factors of general smoothness of the land and degree of slope. Broken surface or rough lands make tillage and irrigation difficult. These lands are less adopted to intensive crops. In these lands such crops like barley, gram, arhar, jowar and bajra are sown which require less quantity of moisture. Smooth land adds greatly to the facility with which labour and machinery may be used for the cultivation of diverse crops.

Change in the elevation results in change of cropping pattern. Different type of soil occurs at different elevations. The deep and more fertile soils are usually found at lower elevations and infertile shallow soils at higher elevations. Type of farming vary because of their differences in elevation in the area. In very low areas a special type of rice (jarhan) is transplanted.

Advanced or late rainy season, relief, weed, irrigation, wind and storm, plant disease, distribution of insects and frost have sufficient effect on the earliness or delay in sowing season in different parts of the area and then on the cost of production and price which can be obtained for the produce of different crops.

B- ECONOMIC FACTORS:

The economic factors influence the agricultural land use patterns through different ways. The most important factors affecting type of farming in the area include: (i) Distance; (ii) Market and market price; (iii) Transportation; (iv) Farm size; (v) Labour supply; (vi) Demand; (vii) Competition with other enterprises; (viii) Change in the relative value of farm products and (ix) Price and Purchasing power.

(i) DISTANCE:- Whenever the question of distance affecting the cropping pattern arises it is related to transport problems and charges. The location of cultivable land around a village, as it exists, is not always very close to the place where from the farmer has to manage his affairs. Sometimes a farmer's landholding is not quite within the reach and is located as far as two to three kilometres away. The farmer, in order to have an easy access to his land for the purpose of cultivation and management often builds a farmstead on the premises of his distant land. The management of such lands from such farm houses becomes quite easy and managable. It takes the farmer little time to send his farm labourers

and other agricultural materials needed for the purpose and he ultimately has to put less input in the farm and gets a high output in return. In case the farmer has to manage his field from the distant village, he has to apply additional hours in providing the field with materials needed and has to spend a lot more on inputs and gets in return which is not in commensurate with the inputs. In other words one can easily find that cultivable plots located nearest to the farmstead are applied with maximum required quantities of inputs while in the farthest, distribution of manure and investment of all other input is less. Thus the intensive farming is found near the settlement and extensive one farther away.

Thus the factor of distance affecting the yield operates through the combined effect of transportation of inputs and outputs and the time spent by the labour in travelling to and fro between holdings and home every day.

In the area where more than half an hour is required to carry the manure to the field the quantity of manure declines sharply. Farmers having the facility of a tractor and trolly, for example, are definitely in

advantageous position as it incurs less cost and time in providing the material needed for the farm and bringing in all the produce and their by products. In rare cases farmers have good means of transport so that they can adjust the problems relating to distance. Majority of the farmers transport all the agricultural inputs and output like manure, fertilizer, grain produced and other farm by products on head or by bullock cart or by bicycle. This process consumes much time and labour and results in a sharp decline of gross as well as net income.

It is quite apparent from the above discussion that distance plays a definite role in the pattern of land use and the production of crops in the area.

(ii) MARKET AND MARKET PRICE:- In the area there are 63 important market spots located randomly, among these Faizabad, Iltifat Ganj, Tanda, Akbarpur, Jalalpur, Sultanpur, Perkins Ganj, Amethi, Gauri Ganj, Shukul Bazar and Bandhua are the most important granary markets. These markets do not cater to the entire needs of the farmers of the area. Most of the villages are two away from these markets with the result that transport becomes difficult and costly. Besides the aforesaid market centres, there are many other small local bazars (markets) both of

permanent and periodical type. Periodical bazars are bi-weekly, weekly and fortnightly in nature. Every village may be said to be affiliated to one of them. In these local bazars only small quantity of vegetables and foodgrains are disposed off at cheaper rate.

Since majority of the consumers is located relatively in small areas like urban centres, the price of any farm product is lowest at the surplus production points which are most distant from the afore-mentioned market centres. Farmers away from these market centres grow perishable and non-perishable crops which are consumed locally. The price which a farmer receives is the price in the nearest market less the cost of production and transportaion etc. As a result the price which farmer receives vary much more widely than do the retail price in the market. In the area under study prices of farm commodities are totally unstable. Sometimes these prices rapidly shoot up and sometimes suddenly come down to an unexpected level. A change in consumer price has an important effect on farmer's price since the entire difference is directly related to the farmer. For example, if consumer is paying hundred rupees for one quintal of some commidity and the total expenditure incurred on the

same is Rs.40/-, then the farmer's price will be Rs.60/-. If in the mean time retail price drops to Rs.70/-, expenditure cost will still remain Rs.40/- and the resulting farmer's price will be Rs.30/-. Thus 30 per cent decline in the retail price caused a 50 per cent decrease in the price received by the farmer, and a further decline of Rs.30/- per quintal from the Rs.70/- level will cause the farmer's price to be zero. Similar relationship will result with an increase in retail price; farmer's price will advance relatively to higher levels than the increase at the retail price level.

Because of the price relationship resulting from varying marketing costs, the general tendency of the farmer is to produce bulky and perishable commodities close to the consuming markets while non-perishables distant from the consuming public.

Price influences the acrage under various crops in the area in three ways:

1. Variation in inter-crop price parity leads to shift in acrage between the crops.
2. Maintenance of a stable level of price for a crop provides a better incentive to the producers to stick on to that very crop and to increase the output.

3. Very high level of price of a certain commodity enforces the farmer to produce that very crop.

Thus marketing facilities and problems, marketing costs and systems play an important role in deciding the pattern of agriculture in the area.

(iii) COMMUNICATION AND TRANSPORT:- Means of communication in the area under study is not satisfactory. Both the distcicts have inadequate means of communication. Very few villages in the area are connected either by railways or metalled roads. Majority of them either have unmetalled roads or have'nt any type of communication except narrow bridle paths and 'chak roads' (roads between the consolidated land holdings). Some of them are totally disconnected during the wet seasons. Rain water collects in small holes and pits and makes movement difficult. Roads are sloppy and slick making walk impossible in rainy season. In hot season, cart-roads are deeply rutted, only dust could be seen on these cart-tracks. When it rains the dusts turn into mud and roads become full of puddles so much so that to say nothing of transport of materials but even ordinary walk on these roads becomes difficult. If the village has a clayey soil then in rainy season all

routes are slippery and greasy rendering not only transport of farm requisites impossible but even stroll uneasy. With an increase of distance from cities and towns communication facility decreases in these village. Villages near the towns and cities, however, have better communication facility but a large number of villages are located away from cities/towns having almost no communication facility which is evident from Table I.

TABLE I

No.of villages connected by different means of communication and their distance from the nearest town.[1]

Distance from the nearest town in Km.	Total No.of Villages.	Pucca roads or metalled roads	Kachcha roads or metalled road	Metalled and unmetalled road	Metalled roads and rail roads	unmetalled road and rail roads	Having no link
0- 5	282	91	112	24	23	3	29
6-10	663	130	297	37	31	5	162
11-15	710	90	268	21	32	5	294
16-25	1547	304	457	59	45	19	627
26-50	2081	352	738	71	58	19	843
51-100	52	5	34	-	-	-	13
Total	5335	972	1906	212	189	51	1963
Percentage	-	18.20	35.72	3.88	3.50	0.95	37.75

1. District Census Handbook of Faizabad and Sultanpur, 1971, Part X-A, P.XV.

It is clear from Table I that a high percentage of villages have no communication facility. It has only unmetalled roads which have easily been rutted and damaged. Villages having no metalled roads and no link for outward movements together account for 73.47 per cent which is roughly three-fourths of the total and the rest 25 per cent have some type of means of communication facility only for outside movement, within the territory of the village these villages also have only unmetalled roads and narrow sinuous paths.

It is clear from the above discussion that the area under study is very much lacking behind in the matter of means of communication both for outside link and also within the area of the village. Without good means of communication, good facility of transport is not possible. The transport system and cost are directly affected by the means of communication present in the area. Transportation of farm products (harvested crops, farm by-products, fodders etc.) from the field to the barn and from the barn to the home or directly from the field to the home and vice-versa i.e. the supply of seeds, manure fertilizer, labour and livestocks to the farm is an essential part of the production process. Keeping in view the transportation

facility and the cost incurred in transporting all farm requisites and farm products, each crop is ultimately assigned to that place where its cost of production is minimum.

Transportation is an important function in the marketing of farm products. It involves the movement of farm products from the point of production to the ultimate consumer. Transport rate for outward movement of all commodities varies over distance, weight of commodity, type and frequency of carrier, volume of commodity etc. and thus brings modification in the pattern of agriculture. Villages having better means of communication and good transport facility produce marketable products whereas villages located at the same distance but lacking in communication and transport facilities do not produce such crops only because of high transport charges and a lot of time consumed in reaching the market.

(iv) FARM SIZE:- In fact size of farm would be measured in terms of the total value of all inputs applied in the field. But here farm size refers to area. In the area farm size pattern has evolved under the influence of

political, social as well as technical conditions. The farm size is not a variable that can easily be manipulated the number of holdings in the area is 730,376.

Farmers with small holdings mostly apply hand methods in farming system. They use oxen for cultivating fields. These cultivators do not apply large quantity of inputs involving cash(chemical fertilizer, hired labour, latest variety of seeds). Instead they apply indigenous manure, and their family members perform strenuous work in the field with the result that they get a high net return from these fields. Substantial farmers who have acquired large acreage make much use of paid inputs such as chemical fertilizers, labour, machinery etc. as a result their gross output increases but net return decreases as compared to small lands holders.

The lands which the Government have distributed to landless labourers are of poor quality. These lands, inspite of being in small blocks, do not produce much. Persons having such lands have to invest much input and very often they were loser rather then gainer. Return from these lands was very poor and requirement of inputs in these lands was very high. Only inferior type of crops could be grown in these fields as a result some of the farmers were

forced to leave these lands which have been rendered un-economical. Some farmers being in a position to bore tube wells and make use of machineries could not avail of these opportunities only because at the time of consolidation they were allotted their lands in separate small blocks and in different sites around the village.[1] These unopportuned formers were coerced to hire water from nearby tube wells, canals or some other sources. Sometimes they could not get water from these sources at the time of extreme need with the result that their crops were damaged for lack of water or they could not grow the crops of their own choice due to non-availability of water at the time when essentially needed. The farmers with one or two large holdings in compact blocks took full advantage of the aforesaid sources and were able to produce the crops of their own will.

It is observed that some relationship between cropping pattern and the size of farm exists in the area. The farmers with small holdings are interested in producing foodgrains for their requirements. They would go in for cash crops only if they have met their requirements of foodgrains with the only exception of some occupational

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1. See Supra, p.1[illegible].

marginal farmers such as Green-grocers (Vegetable sellers) who always grow green vegetables as their pedigree custom. They sell these green vegetables either in the village markets (bazars) or vend it from village to village on head. In case of farmers having big farms, acquintance of technical know-how and relevant education are attracted to grow largely high profit-margin crops like potato, onion, garlic and oilseeds etc. But recently a tendency has developed that most of the farmers, marginal or non-marginal both are inclined to produce some cash crops. It is merely due to wide spread education, social awareness and technical know-how.

It has been seen that in small holdings intensive type of farming is carried out, while in large holdings extensive type of farming is usually practised.

(v) LABOUR SUPPLY AND WAGES: Agricultural labour can be defined as a person who is associated with agricultural activities. It may be either family worker or hired labour who works for wages. A labour may be skilled, unskilled, seasonal or permanent. Table II illustrates the information about cultivators and agricultural labourers in the area for the year 1971.[1]

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1. District Census Handbook of Faizabad and Sultanpur, 1971, part X-B, p.i.

TABLE II

Rural Cultivators and Agricultural labourers for 1971[1]

Name of the Districts	Total No.of workers	Cultivators		Landless Agricultural labours		Others	
		Actual number	Percentage of the total workers	Actual number	Percentage of the total workers	Actual number	Percentage of the total workers
Faizabad	560569	343709	61.31	159905	28.53	56955	10.16
Sultanpur	504669	289910	57.44	162310	32.17	52449	10.39
Total	1065238	633619	59.38	322215	30.35	109404	10.27

It is evident from Table II that among workers about 90 per cent are cultivators and landless agricultural labourers who are engaged directly in agricultural activities and other 10.27 per cent are engaged indirectly in agricultural workers. For example, blacksmiths, carpenters and potters etc. who help in the agricultural pursuits of the area. Of the entire population, 26.77 per cent are cultivators plus landless agricultural labourers of which 9.02 per cent are landless agricultural labourers. Among the total rural population, 29.29 per cent are cultivators and landless agricultural labourers, out of which 9.87 per cent are landless agricultural

1. District Census Handbook of Faizabad and Sultanpur, 1971, Part X-B, p.1.

labourers. The number of landless agricultural labourers in the area has shown an increasing trend between 1961 and 1971, by 1.95 per cent, whereas the number of cultivators have indicated a decreasing trend between the same period by 2.01 per cent.

Number of decrease of total agricultural workers is 20042 per-sons/year. Though apparently the landless agricultural labourers show an increase in the area by 5278 persons annually yet the real work force in agricultural activities is decreasing by 14759 persons per annum. The probable reason for the decrease of total agricultural workers is likely due to the movement of the people from rural to urban centres because greater job opportunities and relatively increased wage rates are expected in the urban centres.

Wage rates of the labourers in the rural areas are also increasingly rapidly from Rs.4/- to Rs.6/-, Rs.8/- per worker. It has been observed that the first probable reason for the increase in wage rate is due to increase in the prices of all essential commodities. This has freed the labourers to charge higher rates of wages. Secondly due to overall decrease in the total work force in the farming areas.

Despite an overall decrease in the total number of workers, sufficient number of agricultural labourers are still available in the area for agricultural work except during the peak agricultural period. Availability of labourers has encouraged transplantation of rice and other labour-demanding crops like potato etc. in some parts of the study area. In the region broadcast system of rice is almost waning; it is being replaced by transplant system. It is only due to required labour force available for the task. Farmers who own tube-wells or have water-pump sets or are living in the vicinity of canals, exclusively practice transplant system of rice. Wherever there is scarcity of water, though necessary laboub force is available, old and early varieties of rice are sown with broadcast system.

Farming system in the area is greatly influenced by the fluctuation in the number of labour force. In the villages where there is shortage of labour, movement of labour usually takes place from surplus areas to these villages irrespective of distance involved and work there at a slightly increased wage rate. Thus farming of those villages which are short of labour is geared out in transplanting paddy, weeding out unwanted grasses and harvesting of 'rabi' and 'kharif' crops.

Since labour cost is regularly increasing in the area and represents the most important cost item for most

farm products, any reduction in the expense for this item results in a substantial decrease in the total cost of production. Wages of these agricultural labourers in the area fluctuate widely in different agricultural seasons and also according to the nature of work they have to do. During the peak of the season there is usually scarcity of labour and therefore the wages normally shoot up very high. The foresighted farmers hire skilled labourers at a slightly increased charges than the average rate for the occasion. This proves incentive for individual workers and creates interest in the labour force with the result that sufficient productive work can be achieved. Thus apparently they pay a high wage but really the wage rate per worker is substantially reduced. Workcan be completed well within time. This device leads to greater agricultural output and ensures more profit. On the other hand farmers waiting for high wages to come down to the level of expectation, usually get unskilled labours which cannot ensure productive work despite intensive supervision. Sometimes it happens that with such labours the prime agricultural period slips away and the farmers grow reluctantly such crops which need less skilled labour i.e., arhar, jowar&bajra.

Though labourers are easily available throughout the area but due to long distances from the cities and towns, the

cost of transportation of farm products and perishables increases so much so that profit fetching crops are not grown in the remote villages away from towns and cities. In the villages located near the cities and towns with slightly higher wage rate but nominal transport charges, the overall expenses on farm products will be relatively low and the net profit will be slightly higher.

(vi) SPECIAL DEMAND FOR FOOD COMMODITIES: During the period under study it has been observed that the area has a greater demand for food stuffs for the following reasons:

1. Natural growth of population
2. Increase in income and change in food habits.

In the area, rate of growth of population is 1.71 per cent. The total rural population in 1961 was 3046343 persons. It rose to 3570209 by 1971. It means that approximately 52386 persons are added every year to the population of 3046343 in the area. This annual increase in population has compelled the rural communities to provide additional food stuffs to the new mouths. In order to meet the demand, the farmers have to introduce new varieties of food grains and intensification of cropping pattern. These efforts on the part of the farmers have helped in increasing the yield per acre but at the same time an overall change in cropping pattern has also been witnessed.

There has also been an appreciable change in the food habits of the farmers during the past ten to fifteen years. Previously crops like barley, gram and pea together were considered as principal crops. In the 'rabi' season farmers mainly depended on such crops which were produced in the'kharif' season while in the 'kharif' season they consumed what were produced in the 'rabi' season. With increase in income from different sources the farming community has shown some change in the food habits. Now they produce five varieites of food grains, particularly wheat, and fine-grained rice which they consume. Arhar is consumed as one of the pulses. Besides, masoor, maong, urd etc. are also consumable in the form of pulses. However, it has been observed that arhar is preferred to other pulses in the area by the rural community. This change in food habit from coarse to fine grains has mainly been accentuated because of availability of superior quality of rice and wheat & also increase in percapita income.

Previously large acreage in 'rabi' season under cultivation of barley, gram and pea is now devoted to the cultivation of new varieties of wheat and potato. This change is evident from Table III. It is obvious from the same Table that in the fifties there is no marked decrease or increase in the acreage of different crops when compared to the figures

of the preceding decade but from 1960 onward there is an almost gradual decrease in the acreage of barley, gram and pea while the acreage under wheat and potato has shown a gradual increase. Acreage under wheat has become almost double during 1950-51 to 75-76 while acreage under potato has shown two and a half fold increase and production almost four-fold in the same period. Acreage under arhar and sugarcane is more or less constant as illustrated in Table III.

TABLE III

Variation of Area among main 'Rabi Season Foodgrain in quinquennium difference from 1950-51 to 1975-76(in percent)[1]

Year	Wheat	Barley	Gram	Pea	Arhar	Sugar-cane	Potato
1950-51	24.00	18.28	25.52	16.62	5.70	8.67	1.19
1955-56	28.15	18.60	27.43	17.30	5.91	5.91	1.37
1960-61	27.60	12.21	27.50	18.45	4.64	8.10	1.39
1966-67*	31.94	16.27	20.44	16.92	5.12	7.85	1.95
1970-71	31.71	14.08	18.24	14.84	5.31	8.59	2.19
1975-76	42.94	11.62	16.89	12.89	5.20	7.88	2.54

* Due to non-availability of data of 1965-66, 1966-67 is considered instead.

1. Agricultural Statistical Department, Lucknow.

On the other hand acreage under 'kharif' crops have shown no distinct decrease or increase which could be seen in Table IV. However production of rice from 1950-51 to 1975-76 has roughly doubled (Table V). Cultivation of peas is very much prone to frost and other unfavourable weather conditions so the farmers hesitate to grow this crop. With the development of new varieties of wheat and rice which can mature in a shorter time the farmers have switched over to high yielding varieties of wheat and rice (Table VI). Since their financial position has improved, they can afford to grow better crops like wheat and rice which can provide good food from the point of view of taste and nutrition.

In the recent years most of the educated farmers have come to realize that protein is highly essential and beneficial for good health and can be derived from pulses and oil-seeds which are high-energy crops, possessing a very high content of protein and oil in their seeds—if the yield is expressed in term of the output of calories per hectare per day. The realisation of the fact that protein is essential for the human body, has compelled the farmers to produce high yielding varieties of pulses and oil-seeds although they are more likely to be affected by bad weather conditions, pests and diseases. Some of the recently developed strains of oil-seeds and pulses are indeed capable of yielding

TABLE IV

Variation of Area among main 'Kharif' Food grains in Quinquennium difference from 1950-51 to 1975-76[1]

(in per cent)

Year	Rice	Jowar	Bajra	Maize
1950-51	43.92	31.34	2.64	22.08
1955-56	88.30	5.50	0.83	5.34
1960-61	81.26	8.65	2.54	7.52
1966-67*	89.36	6.23	0.72	3.66
1970-71	86.90	6.51	0.93	5.65
1975-76	88.13	6.28	0.82	4.75

three to four times the average yield of existing varieties and can also fetch a good price in the market.

It is obvious from the above arguments that cropping pattern in the area has changed accrding to the food habit of the people, better production prospects of new varieties, demand of the food commodities.

*. Due to non-availability of data of 1965-66, 1966-67 is considered instead.

1. Agricultural Statistical Department, Lucknow.

TABLE V

Area, Production and Average Yield of Main 'Kharif' Food Crops in Quinquennium Difference from 1950-51 to 1975-76 (Area and Production in per cent)

(Yield in quintal/heet.)

Year	Rice			Jowar			Bajra			Maise		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y
1950-51	15.56	13.18	5.30	16.23	18.39	12.80	9.17	12.43	10.24	14.56	18.87	8.21
1955-56	14.86	14.60	6.10	13.55	12.69	11.30	13.82	13.57	7.50	16.76	4.19	1.58
1960-61	16.39	17.45	6.70	14.20	16.43	8.90	28.10	19.80	5.30	15.73	11.85	4.70
1966-67*	17.65	11.02	3.90	17.99	16.86	3.40	14.08	8.40	4.50	13.49	12.02	6.50
1970-71	17.70	19.67	6.97	19.38	18.16	5.50	18.57	23.05	9.30	21.46	28.16	8.30
1975-76	17.88	24.04	8.43	18.63	17.46	6.10	16.32	22.54	10.40	17.97	24.88	8.70

Source: Agricultural Statistical Department, Lucknow.

TABLE VI

Replacement of Area from Old to New Varieties of Main 'Rabi' and 'Kharif' Foodgrain Crops and their Average Yield in Quinquennium Difference from 1966-67 to 1975-76

(Area in hect.)
Yield in quintal/hect.)

Year	Rice			Jowar			Bajra			Maize			Wheat		
	Area under old variety	Area under new variety	Average yield	Area under old variety	Area under new variety	Average yield	Area under old variety	Area under new variety	Average yield	Area under old variety	Area under new variety	Average yield	Area under old variety	Area under new variety	Average yield
1966-67*	277077	1729	3.9	19453	-	3.4	2269	-	4.5	11445	-	6.5	113082	11249	8.0
1970-71	149990	129612	6.97	20672	278	5.5	2868	125	9.3	7701	10488	8.3	17684	132728	10.51
1975-76	135576	146893	8.43	16769	3424	6.1	2490	140	10.4	3611	11635	8.7	-	175932	10.31

Source: Agricultural Statistical Department, Lucknow.

TABLE VII

Area, Production and Average Yield of Main 'Rabi' Food Grain Crops in Quinquennium Difference from 1950-51 to 1975-76

(Area and Production in per cent)
(Yield in quintal/hect.)

Year	Wheat			Barley			Gram			Pea			Arhar			Sugarcane			Potato		
	A	P	Y	A	P	Y	A	P	Y	A	P	Y	A	P	Y	A	P	Y	A	P	Y
1950-51	11.90	12.37	9.31	19.29	14.61	8.50	18.03	19.22	6.80	16.40	19.15	9.80	17.11	9.36	5.00	17.57	4.84	88.19	10.58	9.20	76.15
1955-56	13.76	12.65	8.29	19.35	11.20	6.50	19.11	19.53	6.50	16.85	17.37	8.73	17.40	12.09	6.31	11.82	11.99	324.20	12.02	7.72	56.20
1960-61	14.59	10.36	6.40	13.71	20.53	7.50	20.65	25.00	7.78	19.37	23.65	10.33	15.00	15.16	11.10	17.45	24.24	443.80	13.17	10.11	67.20
1966-67*	16.47	14.70	8.00	17.87	16.67	10.58	15.02	6.77	2.90	17.38	12.33	6.01	16.00	16.51	9.42	16.56	14.96	288.60	18.05	12.00	58.18
1970-71	19.93	23.23	10.51	16.28	21.35	14.80	14.11	15.09	6.87	16.05	13.96	7.30	17.36	19.92	10.43	19.08	24.48	410.11	21.39	22.95	93.90
1975-76	23.31	26.66	10.31	13.43	15.62	13.19	13.06	14.06	6.92	13.93	13.51	8.21	17.11	23.93	12.77	17.50	17.52	320.04	24.77	37.98	134.17

Source: Agricultural Statistical Department, Lucknow.

Rapid increase in population in the rural areas has created employment problems with the result that some of the rural population specially during the off season move from villages to towns and cities. This change in location of population has not increased the total demand for farm food but given rise to a new demand for better food because of the increased income of the seasonal migrants from rural areas to the cities and towns. This factor is also responsible for a minor modification in the cropping pattern.

(vii) COMPETITION BETWEEN ENTERPRISES: Competition between various enterprises is essentially based on the relative profitableness in the production of different farm commodities. Competition is a major factor determining the system of farming in some parts of the area. In most parts of the area under study there are several possibilities and numerous combinations of enterprises that can be followed. Physical factors in such parts are favourable for the production of different crops but one single enterprise is so much profitable that it eliminates all other possible enterprises. The areas where sugarcane industries are located, the relative income from this single product is such that other enterprises have been neglected and the major portion of farm income

comes from sugarcane. In the same way in many areas potato has replaced other enterprises. These crops in the area provide major sources of income. Other crops have become of secondary importance although physical factors do favour their production.

(viii) CHANGE IN RELATIVE VALUE OF FARM PRODUCTS: Change in value of one product as compared with that of another frequently affects the type of farming in the area. These changes in the relative value of one farm product are brought about through price change. Price of potato, onion, chilli, garlic etc. changes very frequently. If there is an export of these commodities, then the prices rapidly go up. Some farmers adjust themselves very quickly to these frequent changes. These changes are usually temporary but they bring about minor changes in the agricultural land use pattern in the area.

(ix) PRICE AND PURCHASING POWER: Price is an absolute measure of value in terms of money at a particular time, while the purchasing power is a relative measure of value in terms of what the item will buy. The purchasing power of the price of an agricultural commodity gives an indication of what a given value of this product will buy as compared

with what it bought in earlier years. Average price of wheat in 1978 was Rs.0.80 per Kg. but it is Rs.1.60 in 1983. In term of price wheat in 1983 is about twice as valuable as it was in 1972. A hoe cost Rs.4/- in 1972 but its price has increased to Rs.11.00 in 1983. Thus about 5 Kg. of wheat was required to buy a hoe in 1972 while 7 Kg. is needed to purchase the same quality of hoe in 1983. In terms of purchasing power wheat was more valuable eleven years back than in 1983. It means that the purchasing power of wheat declined during the last eleven years. In the area it has been observed that the farmers who are enlightened have switched over to crops like, pea, potato, onion, garlic etc. which have high purchasing power. However, such farmers are small in number.

(C) FISCAL FACTORS:

Important fiscal factors which affect the type of farming in the area are capital requirements of the farmers and agricultural taxations.

(i) CAPITAL REQUIRED:- Capital requirement in agriculture may be defined as need of money for the better practice of farming and future production of agricultural products.

In the area under study most of the farmers are poor hence the small amount of capital available is a very important factor in determining the type of farming. Well to do farmers are trying to adopt scientific methods of cultivation. They make the better use of machinery and high yielding varieties. They sow latest variety of seed and apply good amounts of chemical fertilizers and have a good return of their investments. The poor farmers on the other hand, cannot afford to spend sufficient money on various items of agriculture with the result that they willingly or unwillingly are forced to cling to the traditional and subsistence type of agricultural practices. For them it is not easier to get financial assistance to supplement their small investment.

Though Government has provided sufficient funds, Rural banks, Cooperative societies and Credit offering agencies are established to finance and assist farmers to purchase better seeds, fertilizers, water pump sets, bore tube-wells but due to mal-practices the needy farmers cannot get necessary financial assistance. It is the duty of the state government to see that the deserving farmers get necessary financial help without least difficulty so that modernization of agriculture can be brought about within the shortest possible time.

(ii) AGRICULTURAL TAXATION: A sound policy of taxation helps economic development by encouraging people to save for investment. Agricultural taxation in the area are of two kinds i.e., direct and indirect taxes.

Direct taxation include land revenue, canl and tube well charges and agricultural income tax. A mong these land revenue and irrigation charges are most important. Land revenue is determined and levied on the basis of quality of soils. Assessment of soil is generally done in an arbitrary manner. It will be greatly appreciated if the basis of irrigation charges is more rationalized.

Direct taxes have almost no straight forward effect upon farming but do affect indirectly. Farmers who are solely dependent upon farming could not buy easily even prescribed amount of fertilizers and other farm inputs in cash. Some of them are living in sark poverty and hence cannot meet the expenses to be incurred on fertilizers and other necessary inputs. In order to help the small farming communities, the Government has exempted land revenue in case of those who are having less than 3 acres of agricultural land. In the recent years the charges in respect of revenue and irrigation have been increassed so much so that even

the middle class farmers have to pay reluctantly to the Government after curtailing other essential requirements like fertilizers. This curtailment results in the reduction of yield per acre and also in the cropping pattern because farmers start sowing such crops which need less fertilizers and irrigation water.

Some farmers in the area have means but do not have opportunities to buy tractors. As the Government do not sanction loan to farmers who possess less than 11.25 acres of agricultural land the farmers have to purchase from their own resources. In such cases they have to pay taxes levied on the tractor. This attitude on the part of the Government has discouraged the farmers to buy the modern agricultural implements on cash. Further, a farmer having a tractor can intensify his cropping pattern and can expect better yields provided that irrigation facilities are available. He can concentrate on cash crops like tobacco and poppy etc. Such crops are grown at selected places only by those farmers who are influential and economically sound. For the reason that licence is needed to grow such crops in addition to high taxes imposed on.

D- TECHNICAL FACTORS:

Important technical factors which are operational in developing and amending agricultural land use pattern in the area under study are (i) Mechanization, (ii) High yielding seed varieties, (iii) Fertilizers and (iv) Plant Protection measures.

(i) MECHANIZATION: Use of up-to-date machineries has not found a good impulse in the area under study. Indegenous agricultural implements of old type are mainly used for agricultural works. Majority of the farmers are using wooden plough for cultivation purposes. Only a few of them are opportuned enough to apply modern mechanical devices in farming practices which could be notice from Table VIII.

TABLE VIII

Number of Farm Implements Used in Agricultural Operations between 1966-67 and 1976-77[1]

Year	Wooden Ploughs	Iron Plough	Seed Drills	Thresher	Pumping Sets	Tractors
1966-67	478471	10506	116	93	544	135
1971-72	435274	14316	394	1265	8867	390
1976-77	431696	50801	911	6950	43719	1265

1. Agricultural Statistical Department, Lucknow

It is clearly noticable from Table VIII that except in the case of wooden plough, all other implements have shown an increase between 1966-67 and 1976-77. Only wooden plough has shown a decrease. Seed drills, pump-sets and threshers have shown a rapid increase between 1966-67 and 1971-72. The pace of their increase slowed down between 1971-72 and 1976-77 while as increase in iron plough has shown a rapid increase between 1976-77. The increase in the number of tractors was almost steady from 1966-67 to 1976-77. The reason of fast increase in the number of seed drills, water pump-sets and threshers is not far to seek. The cost of farm commodities was higher between 1966-67 and 1971-72 and the prices of seed-drills, threshers and water pump-sets were such that the middle and the upper class farmers could buy easily these implements from their farm income. However, these followed a slumpperiod with regard to foodgrain prices and at the same time the prices of farm inputs and implements had gone up between the same period. It, therefore, became almost impossible for the ordinary farmers to buy these implements from the farm income. Only such farmers can buy tractor who are either having big enterprises and belong to upper class or have a side business or side income from other sources than agriculture. Investment of money for this equipment is

chiefly made from the side income that is why this equipment has shown a steady increase between 1966-67 and 1976-77.

Many of the farmers are not having up-to-date facilities of machineries. Those who are not having facilities hire from those who have equipped themselves with modern agricultural implements. Tractor ploughing, that speeds up preparation of the land, may be a necessary condition for the introduction of double and triple cropping in areas where climate and water control have made such attempts possible. Mechanization for auxilary operations has been very useful in easing a seasonal labour shortage in the area. It relieves the pressure on labour at seasonal peaks particularly during planting and harvesting when labour is a hunting factor. Mechanical devices have made possible a rather successful development of rice and wheat cultivation in the area. Excellent yields of these crops are obtained with the aid of fertilizer even in less fertile soils. In some parts in the area under study mechanization combined with irrigation has opened new lands to intensive cultivation of rice and wheat. Thus expansion in cultivated area has been facilitated by the use of mechanical equipments.

(ii) HIGH YIELDING SEED VARIETIES, FERTILIZERS AND PLANT PROTECTION MEASURES: Application of high yielding varieties, fertilizers and pest control brought on astonishing

change in the production and yield of food as well as cash crops. New high-yielding varieties of wheat, barley, arhar (pulses), potato, rice and maize have given rise to two to three-fold increase in production where prescribed amount of fertilizer is applied along with assured irrigation facilities (Tables V and VII). Unfortunately new varieties of food crops are chiefly confined to wheat and rice. Though high yielding varieties of other crops are available yet owing to lack of incentive farmers are not accustomed to grow these crops. It has been observed that in the recent years some farmers have considered feasible to produce new varieties of maize, arhar, oil-seeds and potato.

Mostly rich farmers use latest improved varieties of seeds. Because prices of the newly introduced seeds remain high throughout the year poor farmers could not purchase these seeds. They either borrow or purchase these seeds from rich farmers after one or two season's cropping. Rich farmers frequently change out-dated varieties and use most recent varieties which are free from diseases and are highly productive.

Use of fertilizer has reduced the disparity of soil fertility. With the application of chemical fertilizer the deficiencies of poor quality soils are maintained. Timely application of chemical fertiliser makes the plant rampant

so much so that even in poor soils a good and early crops are being taken with the help of new seeds and assured irrigation. The application of high yielding varieties with the aid of fertilizer and irrigation provision, made lucrative farming possible everywhere either in the girdle of fecund soils/ around the villages or in the poor soils that are located far off from the village sites.

In the area under study the average use of fertilizer stands 52.62 Kg./hect./year for six main food crops and cash crops i.e., wheat, barley, rice, maize, sugarcane and potato. In terms of the total cropped area, it is only 34.80 Kg./hect./ year which is 0.16 Kg./hect./year higher than the national average of 34.64 Kg./hect./year. Application of fertilizer in the area is not even; it varies from 40 Kg./hect to 800 Kg./hect. according to reach of the farmers. Poor farmers use only one-third to half of the prescribed quantity where as rich ones use the same amount as prescribed by the experts.

For every Kilogram of fertilizer applied to the soil, the average return of main food crops is very close to the ratio of one to fifteen.

Insects and diseases are a severe problems especially for rice, wheat and potato. Application of D.D.T., B.H.C.etc. have reduced this problem considerably. Rapid increase in the production of rice, wheat and potato can also be traced

in the area to the availability of the reasonably effective measure of controlling pests and insects damage. Extensive use of insecticide has also been a key factor in the expansion of rice production. Seed treatment, systematic fungicide, sulphur dust etc. have proved very much beneficial for controlling rust and smut of wheat. Potato is protected from early Blight of potato, late Blight of potato and potato leaf role etc. The cost of insect control is very very nominal to the total value of crop to which it is applied yet the use of insecticide is not likely to be economic unless fairly high crop yields are being obtained, otherwise the additional income that results from reducing pests and diseases damage will be small. Thus the full benefit of expenditure on pests and diseases control usually depends upon the availability of complementary factors— the use of high yielding varieties, good standard of cultivation and very often the use of fertilizers—which only large farmers have been affording. Thus small farmers have once more been left behind. Unless Government takes effectual measures in this direction the hiatus between small and large farmers will continue. To bridge this farming gap an effectual plan should be chalked out and the prices of all agricultural products should be fixed in direct proportion to the market prices for all inputs including the sky rocketing labour cost.

E- INSTITUTIONAL FACTORS:

Under this head the author has tried to find out the influence of custom, literacy and illiteracy upon agricultural land use pattern in the area.

In the area inspite of good physical conditions some small and uneducated farmers grow traditional and customary crops which their fore-fathers used to grow. Notwithstanding suitable physical conditions, markets, irrigation and transport facilities to cultivate profit fetching crops like vegetables and seasonal crops, they grow coarse grains which the farmers consume themselves. Hence custom also determines cropping pattern in the area.

In illiterate society, people being a position to practice mechanised farming generally do not adopt new techniques and methods of farming. They do farming with primitive type of mechanical skill, whereas in educated community, people prefer the modern techniques for agricultural operations. They grow high yielding varieties of fine grains and cash crops.

F- POLITICAL FACTORS:

Besides above discussed factors Government's role and policies play a major role in determining the cropping pattern. Agricultural exhibitions, regular radio broad-cast, posters, films and farm publications such as magazines and Government bulletins etc. have played a great role in deciding the agricultural practices in the area.

Sometimes Government pay more attention and provide facilities for and expansion of a particular crop. For instance, in the present situation the Government is anxious to increase the acreage and production of pulses and oil-seeds in the area. Price incentive in such cases has inculcated interest among farmers to grow high yielding and early varieties of these crops.

CHAPTER IV

CASE STUDY OF TWO VILLAGES ONE EACH FROM THE TWO DISTRICTS

The method employed in the present study is based upon questionnaires, village records, census data and interviews with the rural communities. The field investigation in the village was carried out by the author himself and some relevant information were collected about the two villages which have been selected for the present study. The selection of the villages is based on the consideration that they are approachable during all the season and also they are, as far as possible, representative of the area under study. The two villages are Bhaluahi and Pritampur. The former lies in the district of Sultanpur and the latter in the district of Faizabad.

1- VILLAGE BHALUAHI

The village Bhaluahi is located at about 38 Kilometres from the district headquarter and is smaller in area as well as in population. It consists of 25 houses with an area of 53.75 acres. Its population in the year 1983, when the author visited the village, was 183. It consists of three groups of farmers viz., first group includes two

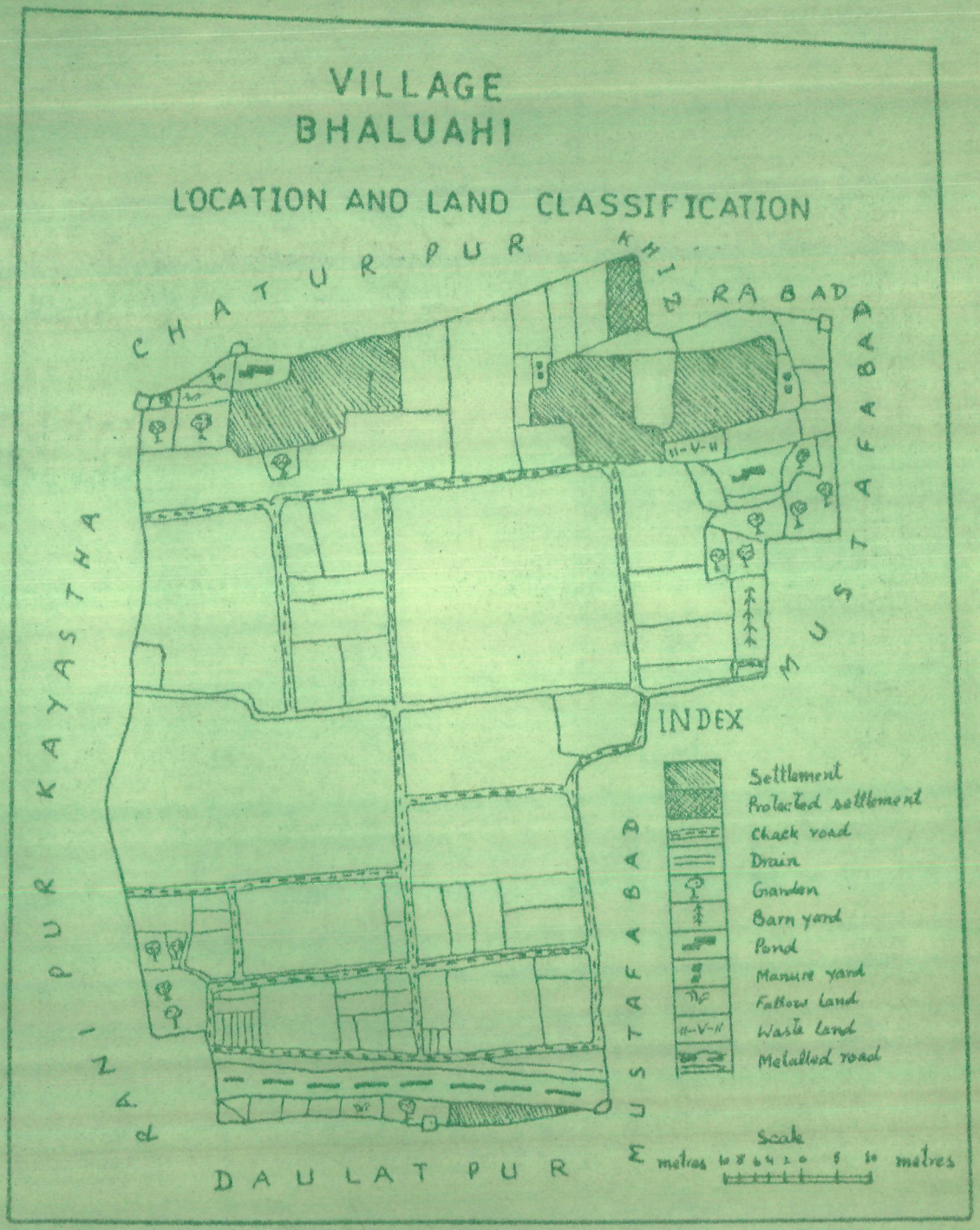
VILLAGE
BHALUAHI
LOCATION AND LAND CLASSIFICATION
CHATURPUR
KHANRABAD
MUSTAFABAD
KAYASTHA PUR
DAULAT PUR
INDEX
Settlement
Protected settlement
Chack road
Drain
Garden
Barn yard
Pond
Manure yard
Fallow land
Waste land
Metalled road
Scale
metres 10 8 6 4 2 0 5 10 metres

FIG-2

two families of affluent farmers possessing 8.87 acres of land with a population of 14 persons. Second group relates to small farmers having 15 families and 21.22 acres of land with 105 persons. Third group of 8 families with a population of 64 persons is a combination of peasant-labourers, very small land-holders, and share cropers who cultivate land on 'batai' system. Almost all the people in the village are directly or indirectly engaged in agriculture either as owner-cum- cultivator or as agricultural labourer.

The climate of the village is similar to that found in the eastern part of Uttar Pradesh. From middle October to the end of November, it is pleasantly and refreshingly cool. But the months of December, January and till 15th February are biting cold. In the month of January two or three sporadic showers are generally felt. Sometimes it is accompanied by hail-storms. On occasions, morning becomes misty and foggy and as such it is harmful for pulses and oilseeds. From 15th February until 15th April, it is agreeably cool again. But onward from 15th April to third week of June, it is sweltering hot and sultry. In the last week of June rainy season sets in and losts upto the middle of October. The months of July, August and September are oppressive and muggy, marked by heavy rains. Rainfall

figures of the village are not maintained. Hence the average annual rainfall at the nearest tehsil headquarter is taken as the standard. Average annual rainfall for Bhaluahi may be taken as 82.5 Cm. From 15th September to 15th October, precipitation is scanty and weather is again moderately hot.

In the village Bhaluahi, there are three types of soils (Fig. 3). The most productive soil lies in the middle-north which is suitable for the growth of vegetables, wheat and sugarcane. To the extreme north-east corner a small patch of matiyar (clayey) soil is found, and the rest of the area is covered by domat (loam) soil, suitable for borth 'rabi' and 'kharif' crops.

Source of irrigation in the village Bhaluahi is tube-well and well. Of the two tube-wells, one belongs to a private owner and the other one to the state irrigation department. Total irrigated land in the 'kharif' season is only 6.89 acres, while unirrigated land accounts for 31.8 acres. In the 'rabi' season, only 18 acres of land are irrigated and 12.62 acres are unirrigated. Kharif crops usually depend upon rainfall.

Rate of charges for irrigation water from private tube-well is Rs.5/- per hour, while charges of government tube-wells are Re.1/- for 5000 gallons of water from

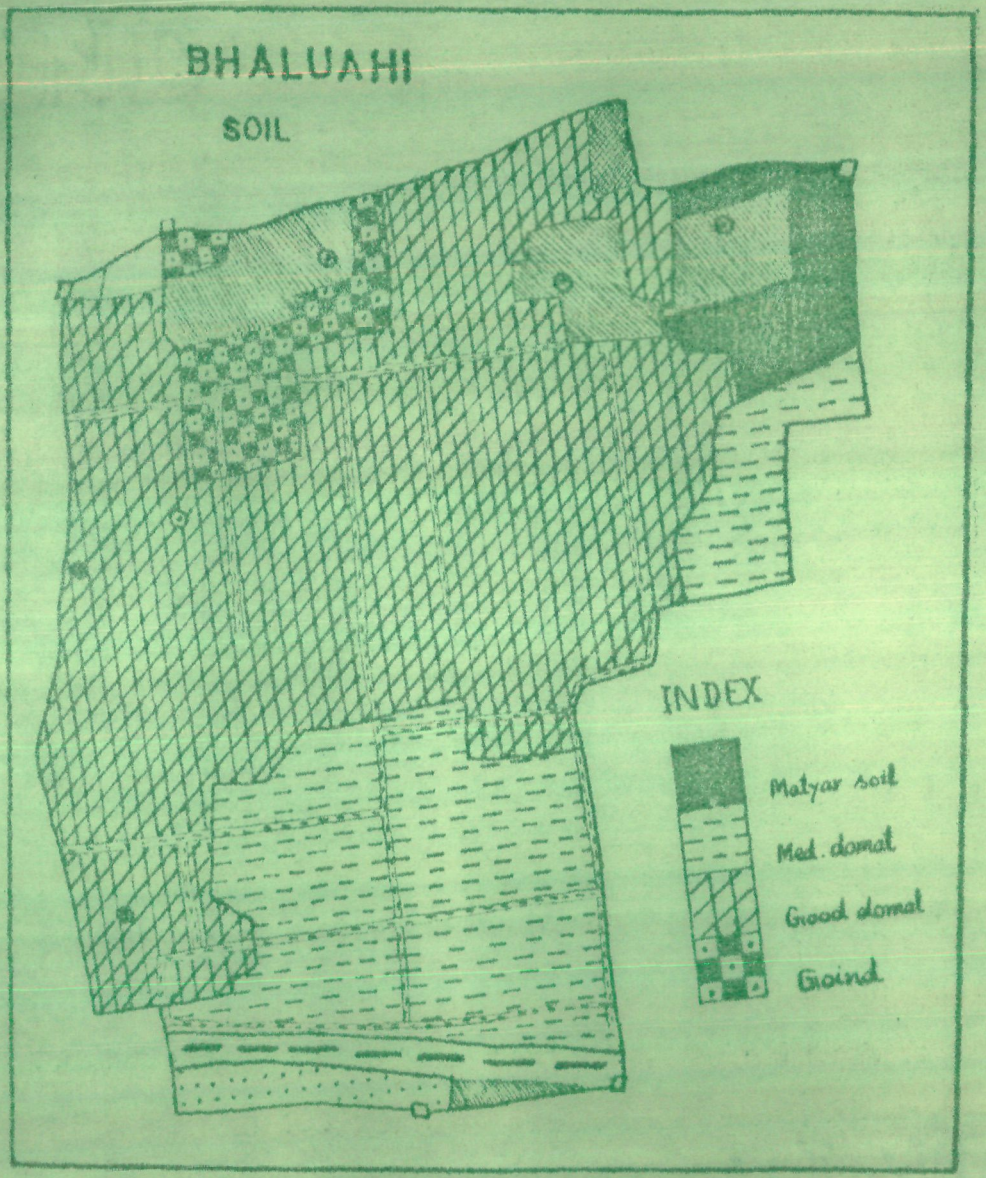
BHALUAHI
SOIL
INDEX
Matyar soil
Med. domat
Good domat
Gravel

FIG-3

16th October to 15th April and Re.1/- for 10000 gallons from 16th April to 15 October. Discharge of water of private tube-wells is very low while discharge of government tube-wells is high, therefore, it is cheaper to irrigate from government tube-wells than private ones.

In village Bhaluahi, cultivation of vegetables increases with the increasing irrigation facility. Cereal crops occupy second place as irrigation is concern. Fodder crops like jowar, bajra, barseem, lobia are located close at hand to the farmer's house. Since these crops are bulky and farmers have to carry these crops daily on head or by bicycle for feeding the animals, keeping the transport factor in view, these crops are grown at close proximity of their houses.

It has been observed that production of a particular crop if grown in the same field every year, goes on decreasing, hence some sort of crop rotation is practiced. As a result of this, a particular pattern of cropping emerges which may be repeated with time interval.

Holdings in the village are being continually sub-divided. As many as 46 plots out of 70 in the village Bhaluahi are less than one acre each. Small size of holding can gainfully be cultivated by small farmers with limited resources, however, when the cultivators are big owners,

they employ some modern agricultural implements and in their cases fields are generally large. Fields nearer to the settlement are apt to be over-worked and remote ones are a little neglected because they involve waste of labour in moving manure, implements and also unnecessary loss of time in plying to the routine chores in the fields. There is every likelihood of damage by theft and cattle-tresspass to the remote field.

Bullock-cart is a multi-purpose vehicle which may be used for the transport of various items. Bicycle is also very commonly used for carrying vegetables to the market and manure and fertilizer to the fields. Tractor in very rare cases is also used for aforesaid purposes. In the village, there are two bullock-carts and one tractor but almost every family has a bicycle. Around the village there are kachcha (unmetalled) roads which have come into being after the village land have been consolidated. Some of these roads become unserviceable with the result movement of commodities stops. The nearest railway station of Bhaluahi is Sambhua. Cropping pattern in the village is seldom affected by the transport difficulties created by rains. It is affected only when there is no irrigation facility or field is very far off from the settlement and it is costly

to move all requisites meant for the cultivation of crops. Nearest market for Bhaluahi is at Kadipur only one kilometre away from the village. The village has its own market which is held bi-weekly on Tuesday and Saturday but it does not attract people from distant places.

The cash crops of the village are onion, potatoes, cauliflowers, cabbage, and other green vegetables. They are usually sold in the town market at Kadipur and they provide the main source of income.

Out of the 183 inhabitants of the village 50 are casual agricultural workers and 4 are permanent agricultural employees. There has been some increase in the population of the village during the last decade. As a result of the increase the demand for foodgrains has also gone up. In recent years old varieties of foodgrains have been replaced by new HYVs to meet the demand of the people. Increasing demand of green vegetables and potato in Bhaluahi has considerable effect on cropping pattern. As a result of increasing demand by the town people the village farming community has decided to grow profit fetching crops instead of only foodgrains. It is obvious from the above noted facts that the market demand is main cause for the change in the cropping pattern in the village Bhaluahi.

BHALUAHI

PATTERN OF KHARIF CROPS

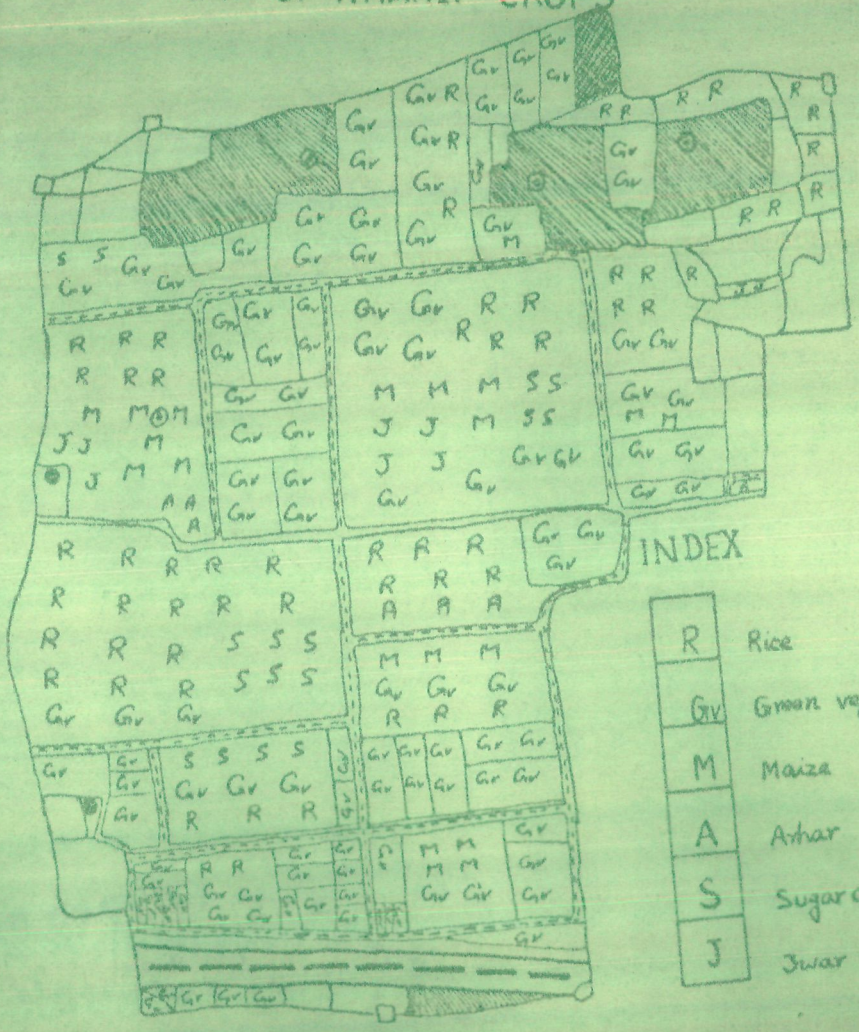

FIG-4

BHALUAHI

PATTERN OF RABI CROPS

INDEX

G	Gram
Pe	Pea
W	Wheat
P	Potato
T	Tomato
Br	Brinjal
Cf	Cauli flower
O	Onion
Ca	Cabbage
A	Arhar
V	Vegetable
S	Sugar cane

FIG-5

In the village there is a multi-purpose cooperative society and a cooperative bank at its block which advances money at a reasonable rate of interest to buy modern implements, seeds and fertilizers. These have brought noticeable change in the cropping pattern of the village. But majority of the villagers still are using indigenous type of implements like wooden plough, small-hoe, sickle, chopper, yoke, patela and flail. Other modern and improved type of implements which are used by small group of farmers are tractor, weston-plough, thresher and pumping sets etc. It is clear from this that the benefit of new strategy has not been evenly distributed among the entire section of the farming community.

2- VILLAGE PRITAMPUR

Village Pritampur is situated on the Hanswar-Tanda road at a distance of 57 Kilometres from the district head-quarters of Faizabad. The villagers live in 40 houses occupying an area of 130 acres with 310 inhabitants. According to the data collected in 1982. In this village there are three groups of farmers. Group first consists of four families with 30 persons and has substantial farmers owning 52.25 acres of land. Group second has 20 families of small

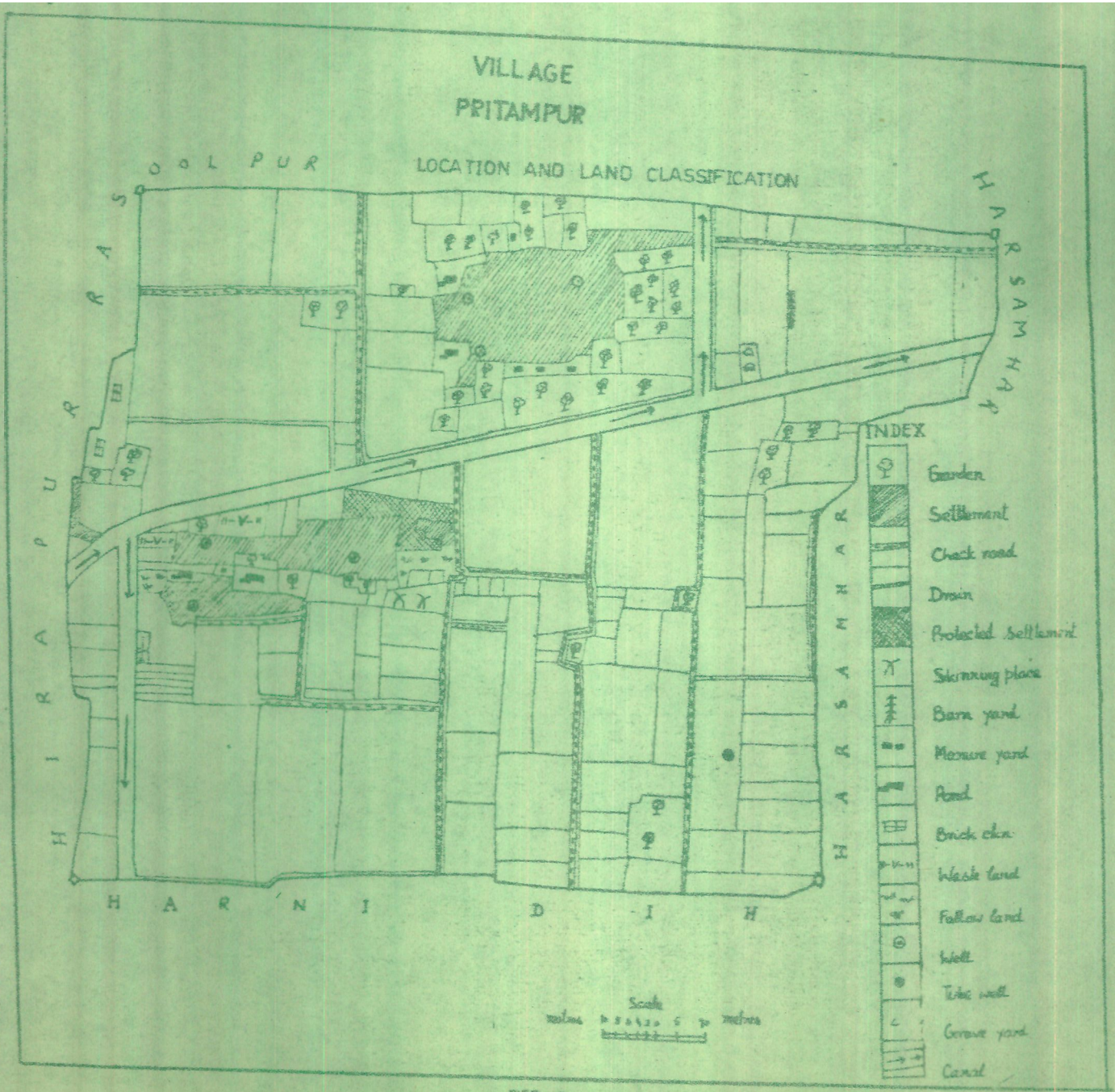
VILLAGE
PRITAMPUR
LOCATION AND LAND CLASSIFICATION
S O O L P U R
H A R S A M H A T
H I R A P U R
H A R S A N A R
H A R N I D I H
INDEX
Garden
Settlement
Check road
Drain
Protected Settlement
Skinning place
Barn yard
Manure yard
Pond
Brick clin
Waste land
Fallow land
Well
Tube well
Grave yard
Canal
Scale
metres
metres

FIG-6

farmers with 150 persons. They own 44.7 acres of land.

Third group is an amalgam of peasant labourers, very small land holders, share-cropers, living in 16 houses with a population of 130 persons. Almost all villagers, one or the other way are engaged in agriculture.

Climate of the village is same as described in the case of village Bhaluahi except rainfall which is 89.5 Cm.

This village, too, has three types of soil (Fig. 7). In the north of the village land is covered with goind soil which elongates towards west. This category of soil is supposed to be most fertile and is best suited to the cultivation of cash crops. The rest of the land consists of good and medium quality domat soils wherein different crops are produced.

Soil, as it has been observed in the area is not the main determinant of cropping pattern. In the village, in sandy loam soils where irrigation facilities and fertilizers are available, rice is very success cultivated, even more successfully than in clayey soil where such facilities are not available and farmers have to depend on only rain water. Wherever irrigation facility is not reliable, less intense cropping is followed. As arhar (pigeon pea) and gram are seldom irrigated, it is axiomatic that it would occupy those

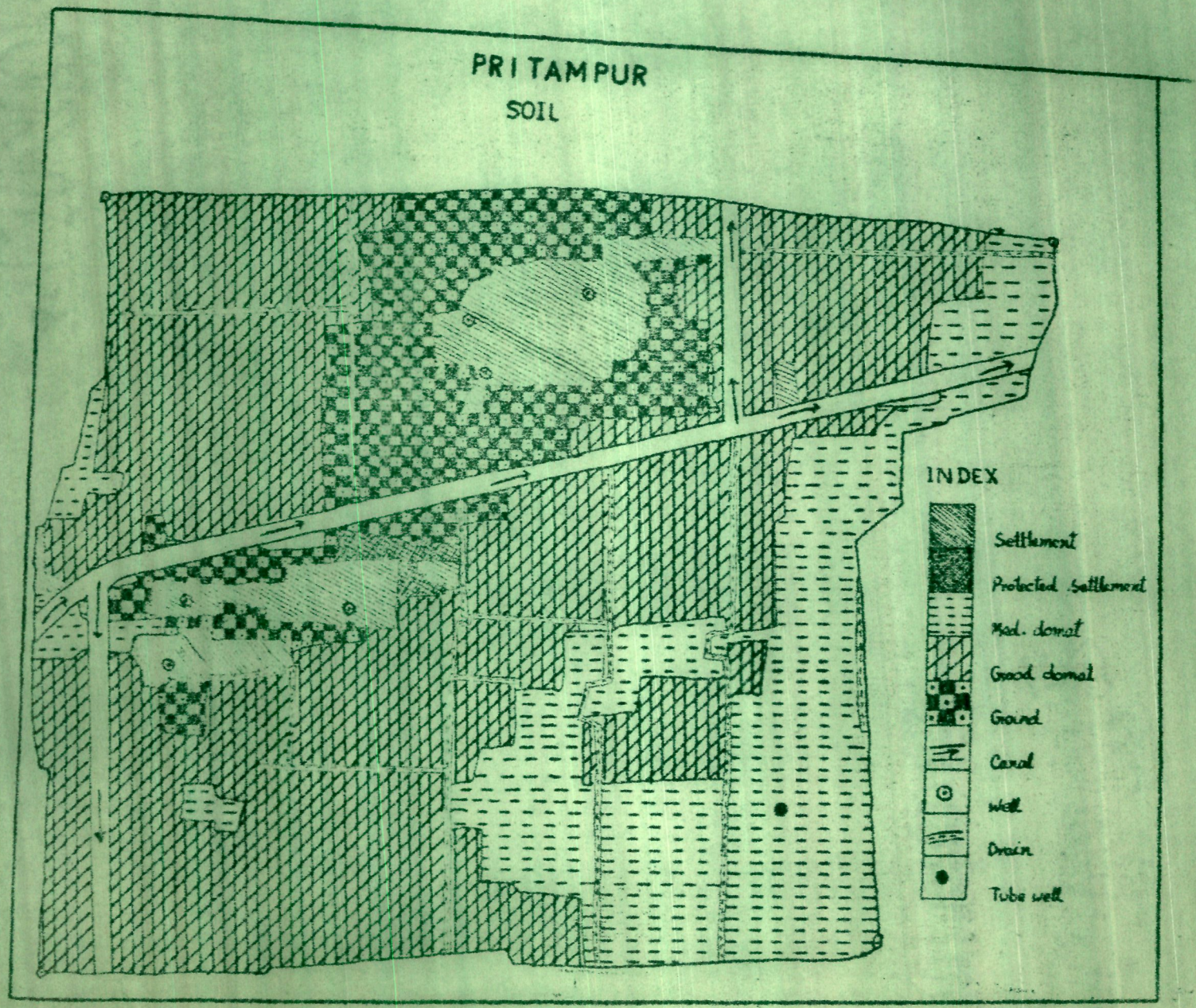
PRITAMPUR
SOIL
INDEX
Settlement
Protected Settlement
Med. domat
Good domat
Ground
Canal
well
Drain
Tube well

FIG-7

fields which receive the least reliable supply of water (Fig. 8,9). Conversely, lands having the reliability of irrigation occupy wheat, rice and vegetable. Irrigation plays the most important part in determining the cropping pattern in the village. It is easily discernible in the south-eastern part of the village where a parcel of land is farther remote from the canal and the ground level is a bit high as compared to other sides, the water carrying capacity of distributaries in this very side becomes sluggish. At some further remove with the increase of distance and height of the ground level water carrying capacity of these distributaries disappears. The charge of hiring water from private tube-well is very high. There farmers grow such crops which depend upon lesser amount of moisture(arhar gram etc.). In the remaining side water is not scarce but a very large amount of water is available through the canal, wheat and rice are planted.

Cost of irrigation of an acre of land for a single watering from the tube-well is Rs.48/- to Rs.68/- whereas from canal, it is very nominal and varies from crops to crops. From flow system, it is Rs.48/- for cereals, Rs.80/- for Sugarcane, Rs.60/- for potato, Rs.17/- for fodder and Rs.36/- for other crops in the rabi season, while in the kharif season, it is Rs.29/- per acre for all crops.

Irrigation cost from lift system is just the half of the flow system for every crop.[1] All these canal irrigation charges are made irrespective of the period of time spent, quantity of water utilized and the number of time watering may be performed.

To indemnify the crops from the fear of larceny, potato, red-pepper and onion are cultivated very close to the settlement but suitability and appropriation of soils are also taken into consideration. Keeping transport factor in view fodder crops are also grown at close proximity to the village. To get rid of the trouble of transport, fodder crops are sometimes grown even in the best type of soils which are nearer to the settlement and are most suitable for other profit-fetching crops. For the location of wheat and rice, distance is not an important factor but irrigation is more important than the nearness to the village core. Gram, arhar (pulse) and barley are quite unrelated to distance. Sugarcane is preferred to be cultivated close to the settlement for the fear of theft and perlion.

Due to the silting of the canals, removal operation of the silt is done every year during the month of April and May. Supply of water on such occasions is completely stopped as a result of which sugarcane crop suffers. In view of the fact, cultivation of sugarcane is limited and can be seen

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1. Canal Irrigation Department.

in patches wherever water from wells and ponds is available.

Due to the fact that the village holdings are still unconsolidated most of the farmers have their holdings at different locations, some of them being far away from the settlement cultivation of various crops are determined according to distance from the settlement, labour force requirement and irrigation facilities available. To prevent the crop from the liabilities of diseases and decrease in the production some sort of crop rotation is also practiced.

Due to continual sub-division of the holdings, 95 plots out of 120 are less than one acre each. The small holdings of the farmers are rarely in a compact block with the result that it involves waste of labour and land in providing boundaries, moving manures, fertilizers and implements to the field. It also restrains cultivators from attempting improvements.

Bullock-cart and Bicycles are the main source of transport in the village. Bicycle is very frequently used for taking grains to the market and bringing in the threshed and winnowed grains from the farm to the farmer's house. There are ten farmers in the village who own bullock-carts but none has tractor.

Means of communication for and to the fields are only kachcha roads and narrow foot-paths. There is one paved road which passes along the northern side of the village. Means of transport are neither cheaper nor efficient. There is no proper marketing system and facility. Local market is held on Sundays and Wednesdays. Only the nearest market of some value is at Hanswar at a distance of four kilometres from the village. Here Capsicum is an important crop which is generally marketed from Hanswar. Almost every villager grows chilli as a cash crop for it provides the chief source of income. Potato is another cash crop which yields sufficient income to the farming community of the village. Anticipated price and prospect of chilli in the market is always excellent and farmers get immediate cash in the market as soon it is sold.

Village Pritampur which is located at a distance far away from the city does not produce most of the greens and perishables for commercial purposes for they are likely to be destroyed in the transit. Another reason for not producing the commercial crops is that the cost of transportation is very high. They are, however, found in patches in the periphery of the village for home consumption or very rarely for local sale in the village market. Wheat, rice and red-pepper are the main crops of the village.

In the village there are 80 casual agricultural workers and 5 permanent empoyees of the agricultural department in the village. The month of July, August, November, March and April are noted as peak periods for employment of agricultural labourers. In July and August sowing and transplanting of paddy is carried out. Weeds in these months are too rampant and in wanton profusion, there removal from the paddy fields starts in the month of August. In the month of October/November, reapening of rice and in March and April harvesting og wheat and of the rabi is done. These are the labour incentive operation. Labourers are adequate except at the time of harvest of kharif (rice) and rabi crops for the simple reason that the three brick-kilns located at the periphery of the village very much attract the labourers where they are handsomely paid. Such payments are not possible from the land owners for agricultural works.

As a result of gradual increase in the population, the demand for foodgrains has also increased in the village. To meet the demand, new HYVs (High Yielding Varieties) have been introduced. This change has met the demand. In the recent years sharp rise in the prices of oil-seeds, potatoes, gram, peas and arhar (pulses) has not brought about any

change in the attitude of most of the farmers towards diversification in the cropping patterns. They still give importance to rice and wheat which serve as food items for the farming community of the village. Crops like oil-seeds, gram, arhar and potato are grown only for their personal needs.

The village has a multi-purpose cooperative society and a cooperative bank located at the block which advances money to the farmers at nominal rate of interest for the purchasing of various agricultural items e.g., pumping-sets, new varieties of seeds and fertilizers. These facilities have been utilized by a few well-to-do farmers, the rest of the cultivators are still using old type of implements. They are of the view that if new technology is applied to small size of holdings, they may not be benefitted. Hence most of them have not purchased modern agricultural implements. However at the time of agricultural operations, some of the farmers hire pumping sets and tractors from the nearby villages on cash payments.

In both the villages under study new agricultural technology has brought about limited change in the cropping pattern. However a few substancial farmers have started intensive farming, growing mostly cash crops or items which can fetch very good price in the town market. This trend has been reasonable for the gradual change in the decade-old cropping pattern.

PRITAMPUR

PATTERN OF KHARIF CROPS

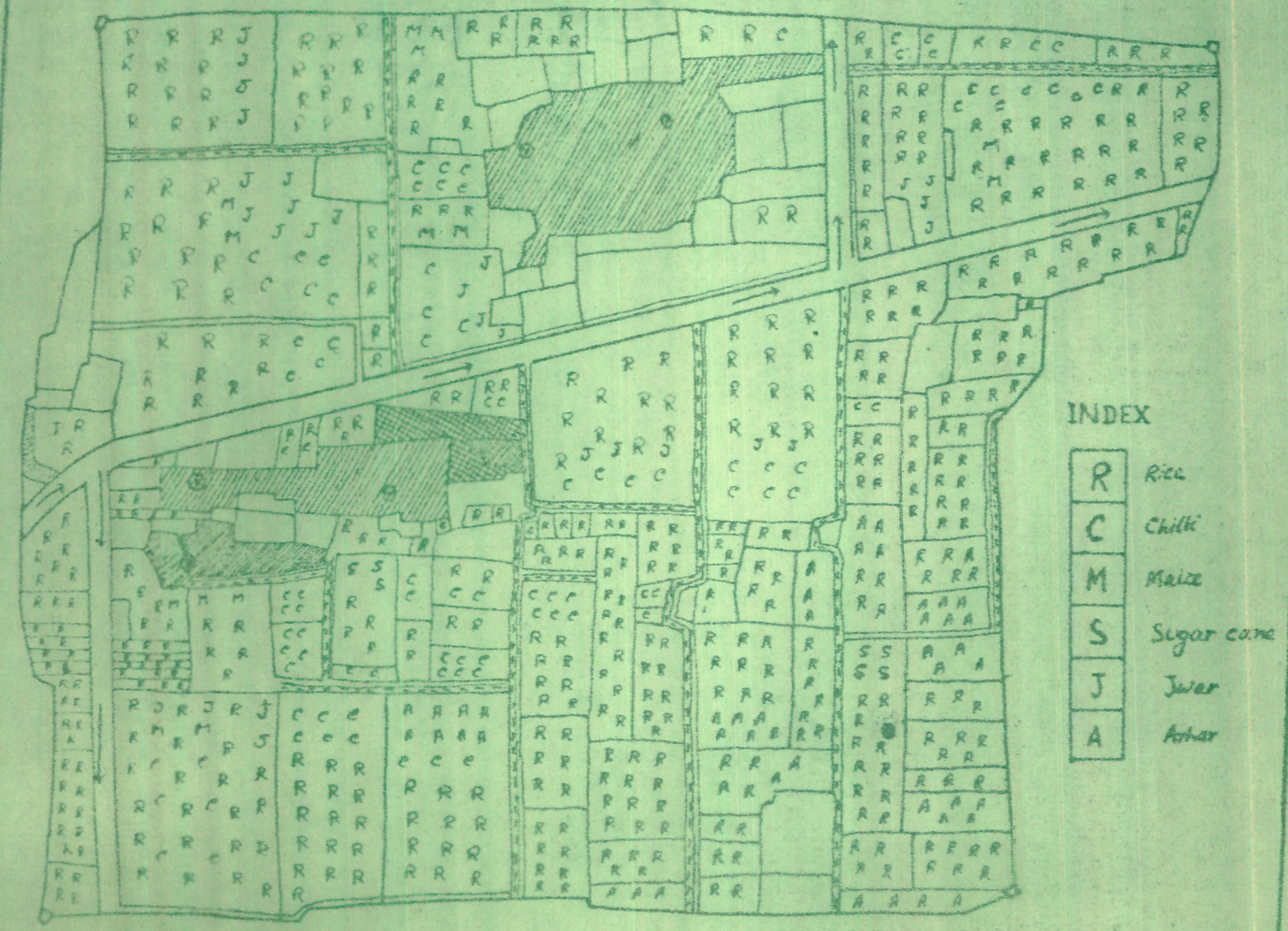

FIG-8

PRITAMPUR

PATTERN OF RABI CROPS

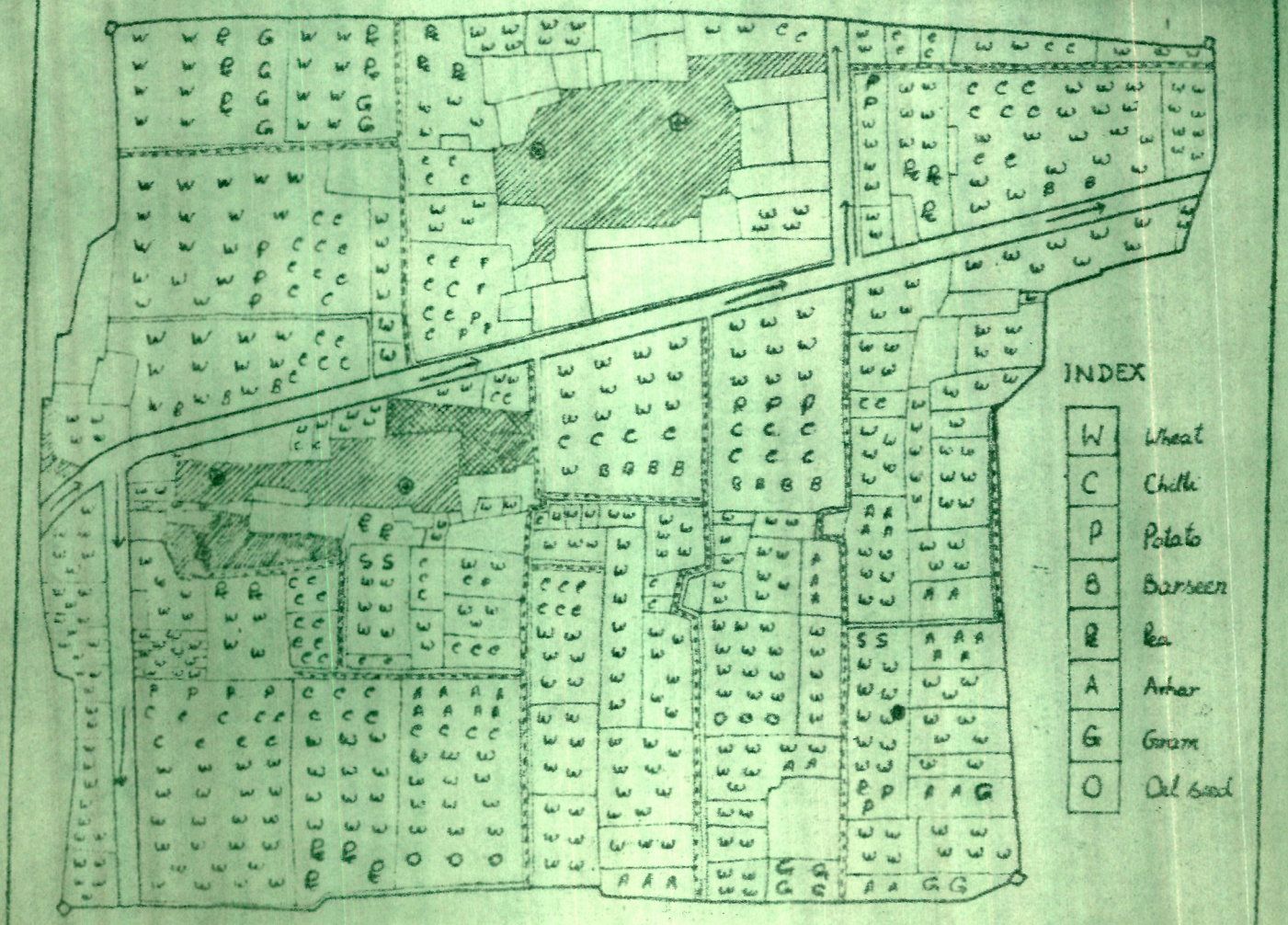

FIG-9

CHAPTER V

CONCLUSION AND SUGGESTION

Except for a few years, India has been a net importer of foodgrains since 1951. The comfortable foodgrain position resulted only after the introduction of new strategy revolving around high yielding varieties of foodgrain in the latter half of the sixties, and also in the seventies.

The Planning Commission's warning that the country is likely to face serious food shortage in the years to come (1983-84). On account of high rate of population growth. In the year, 1981-82, although it was a very good crop year, the government imported one million tonnes of foodgrains at an estimated cost of Rs.230 crores. In 1982-83, a contract was made with some country to buy four million tonnes at an estimated cost of Rs.1280 crores. Hence there is a real danger of limiting economic growth. All the savings made through the export of oil, fertilizers, cement and steel etc. will be off-set by the growing import.

The immediate need of the country is to enhance the productivity of the land through all possible ways so that the teeming million could be fed adequately and also some surplus foodgrains could be maintained. With a view

to achieve the target, it is essential that the agriculture should be modernized as far as possible. Use of chemical fertilizers, insecticides and technological innovations should be stepped up. Such programmes are bound to help to achieve the target.

It is important that a farmer's incentive to use fertilizer and other inputs is largely influenced by the marketable price of all crops and the anticipated additional yield of the crop which together computes the anticipated income. The farmer pushes the use of fertilizer up to the point where the profit are maximized.

In the area under study, use of fertilizer (urea) in 1974-75 during rabi season was 14034 tonnes; in 1975-76 it rose to 15152 tonnes; in 1976-77 it was 22890 tonnes but in 1977-78, it declined to only 5537 tonnes sharply. The huge spurt in consumption of fertilizer between 1974 and 1977 was the result of successive cut in fertilizer price. But in 1977-78, growth of trend suddenly fallen from 22890 tonnes in 1976-77 to 5537 tonnes was the direct result of 64 per cent increase in fertilizer price.

The author has observed in the area that use of available fertilizer and high yielding varieties with the aid of irrigation and improved transport system produced appreciable increase in yield/acre. It is worthwhile to

mention that the use of fertilizer and pesticides not only produced higher yield of different food crops but also maintained the crop in healthy bearing conditions, When imporved seed together with fertilizer is used it gives a two to three-fold increase in yield but all this is off-set by the natural calamities.

As mentioned earlier that farm productivity as well as output depends mainly upon the use of increasing quantity of purchased inputs and for these farmers must depend upon agricultural sources. Their ability to purchase input from agriculture, however, depends upon their receipt from sale of farm products. But in a predominantly agricultural economy as it is seen in the study area, the market demand for agricultural output(except for the possibility of export) is severely limited for the dependence of relatively small population which has nearly subsistence type of agriculture. Thus the scope for raising output/worker in agriculture is dependent upon the growth of domestic demand for agricultural products relative to the size of the farm population.

Economic pressure on producers causes them to sell most of their output at harvest time, so that the price they receive is much lower than average prevailing throughout the year in the whole sale market. This constitutes the effective brake on expansion of output.

Farmers often do not receive the price reported by statistical agencies because they do not sell in the market covered by price reports. They rather sell in their own towns or villages to local dealers with whom they are in poor bargaining position.

Two basic requirements for enabling market to provide production incentive in the area may be as follows:

1. Reasonably established price i.e. without sporadic intra or inter-seasonal change in price.
2. Adequate marketing channels with transport facilities and establishment of price reflecting in profit incentive to the producers. Cash return to producers depends on their goods reaching a consumer. So the success of production pattern depends on efficient transport to bridge the gap between the producers and the consumers.

Some other factors are also equally responsible to provide production incentives.

1. Price should be known to farmers sufficiently far in advance for various commodities to be grown so that they can plan cultivation of the important crops.
2. Price should cover a sufficient period of time to permit completion of production plans with reasonable certainty.
3. Prices of all special commodities should be made statutory and in consonance with input cost.

4. The most important seven inputs should receive special attention by the government i.e. crop production technology, fertilizers, farm implements, improved seeds, pesticides, irrigation and credit.

5. Certain type of fertilizers and technical implements should be exempted from excise and customs duty which would be helpful in bringing down their prices to some extent.

The area under study is very much lacking behind in good transportation. It is inefficient, undesirable and unsatisfactory. The main sources of transport are bullock-cart, bicycle, tractor and head drawn transport on foot. Railways and roadways are seldom used for transportation of agricultural goods. Transport is a very efficient and influencial factor as it bridges the market to the village and farm. It exerts greater influence on agricultural land use pattern. Transportation not only has its direct bearing in outward movement of produce but also helps in the delivery of farm seeds, fertilizer and all other requisites needed for the farm. It is, therefore, imperative to develop the transport facility in the area.

Giving the availability of input needed to improve technology and a sufficient final demand for increased output, how rapidly farmer will adopt the improved technology depends upon source of production credit, development of

efficient marketing system linking rural supply and urban demands. But the area under study where the economy is predominantly of subsistence type, such a system obviously does not exist. Such infra-structural investment as facilities for tramsport and communication are of particular importance to agricultural development. Without an efficient system of exchange, urban demand can not be effective as incentive to farm production.

Distance of farms from the village is of major concern. Farms are located at numerous places and various distances from the core of the villages. As discussed earlier, the cost of production increases as the distance from the village becomes greater and greater and actual level of input tends to diminish with increase in distance.

Distance may be adjusted by enterprising the same product less intensively or there may be a substitute of less demanding labour products or by providing very efficient transport. If the transportation is improved, the cost of transportation would be cheaper. It would also reduce the distance between land and village which are located away from the settlements. It would also reduce the distance between village and city in the sense

of cost incurred in transporting agricultural goods. The target of achievement of increased output depends upon better land management (farm size) distance of holding from the village or dwellings, market price, labour management, cheaper transportation system, irrigation, capital formation, fertilizer, pesticides and technical facilities. Fertilizer pesticides, cheaper and efficient transportation and technical facilities by raising productive capacity will act as a substitute for land and labour and lead to change in productive structure.

Tractor is considered as an essential component of agricultural operation. Though high yielding variety crops have enabled the farmers to reap the profit of two or three crops during the year, yet an acute shortage of labour has created problems which the farmers find it difficult to solve. This emergency, which has been a permanent feature, has compelled the farmers to switch over to tractorization. It is generally thought that tractorization displaces labour force but in the area it is felt that it has only reduced bullock-power because it could not display human labour.

It has been noticed in the area that women and children of the families having tractors, freed from the necessity of tending bullocks, have by and large,

begun to tend buffaloes instead. This has been made possible because production of fodder has increased due to increased intensity of cropping.

Speed of adoption of more productive method is affected by farmer's willingness to change and by their information regarding the opportunities open to them. Education can be a major factor to subdue these, both in teaching special techniques of production and gradual instilling and understanding of change, its necessities and its benefits.

It is actually a good sign and good move that the government has adopted in the current kharif and rabi seasons to inculcate the farmers of innovations. The agricultural secretary, has sent a communication and authority letters to all the states giving details of the programmes to be undertaken. The states have been advised to identify and contact farmers in every village through whom the improved farm technology has to be propagated. The right type of quality seeds of crops suitable for different agro-climatic regions will be stocked in adequate quantity and made available to the farmers before the sowing season begins with the onset of rains.

The states have been asked to establish special farmers' service windows and sale points to provide instant services regarding revenue recoriverification, loan applications, input etc. The distribution of free mini kits of seeds and fertilizers has been arranged. The special credit-cum-input melas (fairs) were organized for the sanction of loans and the supply of inputs. Mobile vans with officials connected with financial institutions went to the interior to make the inputs available to the farmers on the spot.

The rate of interest charged by commercial banks had also been lowered by one per cent in the case of short term loans for agriculture, making the farm credit cheaper.

In spite of all the above efforts made by the government farmer's income are stagnating or falling in real sense over the past several years. The debt burden on farmers had mounted. Low prices of agricultural produce coupled with steady rising cost of cultivation had aggravated the situation in the area. The government should without any further delay, fix the prices in paving the way for reciprocally beneficial exchanges between the agricultural commodities and non-agricultural commodities.

Serious problems crop up in the way of marketing of wheat, rice, sugarcane and other items. The prevailing prices in many cases are far below the growers cost of production. Any further negligence on the part of the government towards the farmers cause would surely harm producers interests and in the long run the consumers interests as well.

In spite of all the efforts made and incentives provided, the government has not been able to get rid of the vagaries of the unreliable weather conditions. Though the agricultural production process is but partly subject to human control agricultural management and feat requires the ability to cope with randomly variable exigencies of local weather and other growing conditions. In the preceding two or three years in a row the weather conditions during the rabi season were extremely unfavourable and capricious as a result of which mcuh damage was caused to the standing crops. At the time of harvest a lot of ears and loose grains were dropped from wheat and barley and rice plants in the fields and remained either ungleaned or were gleaned by farm workers or pecked by birds and animals resulting in colossal loss to the farmers. Unpropitiousness of the weather has

escalated the problem more and more it has destroyed bulk of the ready crops either in the field in ungathered or ingathered or after they have been brought to the barn-yard for threshing and winnowing. Whatever amount saved was discoloured and lost its lusture thereby lowering the market price.

There is no suitable arrangement for the communication of the weather forecast well in advance to the farmers with the result that very often crops could not be saved from the ravages of the weather.

There should also be an arrangement to provide the farmers with modern agricultural equipments like threshing machines, winnowing machines and reaper or combine reaper etc. by the government agencies so that the peasants may hire them in times of need. In this way thousands of farmers can be benefitted.

Interalia, hybrid seeds of early variety must be evolved through R & D (Research and Training) or by importing from abroad to cope with the unclement and unpropitious.weather conditions.

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